The EDISON ELECTRIC INSTITUTE BULLETIN

October 1955

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GEOGRAPHY & INDUSTRY

Published Monthly by Edison Electric Institute

You and Your Committees

General and Engineering Committee Work for 1955-56

165 Million VIPs
Harllee Branch, Jr.

Dixon-Yates in Retrospect
Paul Hallingby, Jr.

People and Profits
N. Bernard Gussett

Voltage Dip and Automation
C. E. Quick

ELECTRICAL RESEARCH STATISTICS
THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

(Includes Investor-Owned Companies, Cooperatives, and Government-Owned Utilities)

July, 1954-1955

SOURCE AND DISPOSAL OF ENERGY—MONTH OF JULY

	1955	1954	%
NET GENERATION* (Kwhrs in Thousands)			
By Fuel Burning Plants	37,274,688	31,379,282	+18.8
By Water Power Plants	9,350,349	8,754,069	+ 6.8
Total Generation	**46,625,037**	**40,133,351**	**+16.2**
Add—Net Imports Over International Boundaries	262,539	172,953	+51.8
Less—Company Use	127,922	140,372	− 8.8
Less—Energy Used by Producer	1,264,588	1,193,301	+ 6.0
Net Energy for Distribution	**45,495,066**	**38,972,631**	**+16.7**
Lost and Unaccounted for	5,937,746	5,078,607	+16.9
Sales to Ultimate Customers	**39,557,320**	**33,894,024**	**+16.7**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of July 31st			
Residential or Domestic	43,828,021	42,568,946	+ 3.0
Rural (Distinct Rural Rates)	1,638,914	1,640,167	− 0.1
Commercial or Industrial:			
Small Light and Power	6,061,011	5,967,729	+ 1.6
Large Light and Power	284,580	277,651	+ 2.5
Other Customers	168,619	162,540	+ 3.7
Total Ultimate Customers	**51,981,145**	**50,617,033**	**+ 2.7**
KILOWATTHOUR SALES—During Month of July (Kwhrs in Thousands)			
Residential or Domestic	9,262,300	8,424,830	+ 9.9
Rural (Distinct Rural Rates)	1,159,917	1,170,253	− 0.9
Commercial or Industrial:			
Small Light and Power	7,061,168	6,498,839	+ 8.7
Large Light and Power	20,551,261	16,343,104	+25.7
Street and Highway Lighting	305,159	282,302	+ 8.1
Other Public Authorities	833,471	772,700	+ 7.9
Railways and Railroads:			
Street and Interurban Railways	179,809	198,407	− 9.4
Electrified Railroads	154,913	151,628	+ 2.2
Interdepartmental	49,322	51,961	− 5.1
Total to Ultimate Customers	**39,557,320**	**33,894,024**	**+16.7**
Revenue from Ultimate Customers (Thousands)	**$661,284**	**$604,006**	**+ 9.5**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—For 12 months ended July 31, 1955			
Kilowatthours per Customer	2,662	2,459	+ 8.3
Average Annual Bill	$70.81	$66.64	+ 6.3
Revenue per Kilowatthour	2.66¢	2.71¢	− 1.9

* By courtesy of the Federal Power Commission.

THE EDISON ELECTRIC INSTITUTE BULLETIN is published monthly by the Edison Electric Institute, an association of electric light and power companies in the United States and its territorial possessions. Its affiliate members consist of members of the Canadian Electrical Association.

The objectives of the Edison Electric Institute are:

The advancement in the public service of the art of producing, transmitting, and distributing electricity and the promotion of scientific research in such field.

The ascertainment and making available to the members and the public of factual information, data, and statistics relating to the electric industry.

To aid its operating company members to generate and sell electric energy at the lowest possible price commensurate with safe and adequate service, giving due regard to the interests of consumer, investor, and employee.

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The EDISON ELECTRIC INSTITUTE BULLETIN

October, 1955

Vol. 23 No. 10

Articles, Speeches, Reports

EEI General and Engineering Committee Activities for 1955-56 323

You and Your Committees 323

EEI General Committees 324

EEI Engineering Committees 331

Effects of Atomic Blast Published in EEI Report..... 336

165 Million VIPs
Harllee Branch, Jr. 337

Dixon-Yates in Retrospect
Paul Hallingby, Jr. 341

People and Profits
N. Bernard Gussett 345

Voltage Dip and Automation
C. E. Quick 348

News, Notes, Miscellany

New Lighting Education Program..... 335

World Power Conference Chooses Canada for 1958 Meeting 340

Personals 351

New Film on "Closing" Sales Available from EEI..... 352

CONVENTIONS AND MEETINGS

1955

NOVEMBER

2- 3 CEA Personnel Relations and Public Relations Meeting, Eastern Zone, Montreal, Canada

3- 4 EEI-AGA Taxation Accounting Committee, Plaza Terrace, Cincinnati, Ohio

3- 4 PCEA Business Development Section, Huntington-Sheraton Hotel, Pasadena, Calif.

3- 4 PUAA Region #2 Meeting, Rochester, N. Y.

3- 4 Society for Advancement of Management Conference, Hotel Statler, New York, N. Y.

8 CEA Engineering and Operating Sections, Motor Vehicles, Eastern Zone, Montreal, Canada.

10 CEA Engineering and Operating Sections, Service Connections & Metering, Eastern Zone, Montreal, Canada

10-11 PCEA Hawaiian Conference, Reef Hotel, Honolulu, Hawaii.

13-18 ASME Diamond Jubilee, Congress-Hilton-Blackstone Hotel, Chicago, Ill.

14-16 EEI Accident Prevention Committee, Beaumont Hotel, Beaumont, Texas

14-18 NEMA Annual Meeting, Hotel Traymore, Atlantic City, N. J.

15-16 EEI Commercial Lighting Committee, Terrace Plaza Hotel, Cincinnati, Ohio

16 EEI Residential Group Chairmen, Terrace Plaza Hotel, Cincinnati, Ohio

16-17 PCEA Administrative Services Section, Hotel California, Fresno, Calif.

17 Northwest Electric Light & Power Association 48th Annual Meeting, Davenport Hotel, Spokane, Wash.

17-18 EEI Industrial Power and Heating Group, Lord Baltimore Hotel, Baltimore, Md.

17-18 EEI Industrial Relations Committee, Joint Meeting with New England Personnel Group, Somerset Hotel, Boston, Mass.

18 Southeastern Electric Exchange Power Coordination Committee, Henry Grady Hotel, Atlanta, Ga.

21-22 CEA Western Zone Sections, Sales & General Divisions, Regina, Sask.

21-22 PIP East North Central Regional Meeting, Detroit, Mich.

24-25 CEA Engineering Sections, Western Zone, Hotel Palliser, Calgary, Canada

28-Dec. 1 9th Exposition of Air Conditioning & Refrigeration Industry, Auditorium, Atlantic City, N. J.

30 ECAP Copy Group Meeting, Ayer Studio, New York, N. Y.

30 PUAA Directors Meeting, New Orleans, La.

DECEMBER

1- 2 EEI-AGA 1956 Conference Planning and 1957 Time & Place Committee Meeting, Headquarters, New York, N. Y.

1- 2 PUAA Region #5 Meeting, New Orleans, La.

1- 3 American Society Refrigerating Engineers Annual Meeting, Traymore Hotel, Atlantic City, N. J.

5- 6 EEI Commercial Electric Space Heating & Air Conditioning Committee, Terrace Plaza Hotel, Cincinnati, Ohio

5- 6 EEI-AGA General Accounting Committees, New Orleans, La.

5- 6 EEI-AGA Internal Auditing Committees, Palmer House, Chicago, Ill.

6- 7 EEI Street Lighting Committee, Indianapolis, Ind.

1955

7- 9 EEI Commercial Cooking and Water Heating Committee, Boston, Mass.

8- 9 EEI Customer Relations Committee, Hotel Carter, Cleveland, Ohio

8- 9 EEI-AGA Customer Accounting Committee, Henry Grady Hotel, Atlanta, Ga.

8- 9 PUAA Region #4 Meeting, St. Louis, Mo.

15 EEI Industrial Relations Committee, EEI Headquarters, New York, N. Y.

1956

JANUARY

15-17 EEI Dealer Coordination Committee, Chicago, Ill.

16-19 CEA East Division Meeting, Halifax, N. S.

19 EEI Financing and Investor Relations Committee, Hotel Biltmore, New York, N. Y.

19 EEI Industrial Relations Committee, EEI Headquarters, New York, N. Y.

19-20 PUAA Region #9 Meeting, Phoenix, Ariz.

20 Oklahoma Utilities Association, Accounting Section, Alvin Hotel, Tulsa, Okla.

23-25 American Society Heating & Air Conditioning Engineers Annual Meeting, Cincinnati, Ohio

30-Feb. 1 EEI Prime Movers Committee, Warwick Hotel, Philadelphia, Pa.

30-Feb. 3 American Institute Electrical Engineers, Winter Meeting, Hotel Statler, New York, N. Y.

31-Feb. 1 EEI-AGA Plant Accounting and Property Records Committee, Hotel Carleton, Pittsburgh, Pa.

FEBRUARY

2- 3 Missouri Valley Electric Association, Industrial and Commercial Sales Conference, President Hotel, Kansas City, Mo.

2- 3 EEI-AGA Conference Planning, Wm. Penn Hotel, Pittsburgh, Pa.

6-10 National Industrial Electric Heating Conference, Netherland Plaza Hotel, Cincinnati, Ohio

7- 8 EEI Transmission and Distribution Committee, Warwick Hotel, Philadelphia, Pa.

9-10 PUAA Region #3 Meeting, Cincinnati, Ohio

9-10 Southeastern Electric Exchange Personnel Administration Section, Buena Vista Hotel, Biloxi, Miss.

13-14 EEI Electrical Equipment Committee, Homestead, Hot Springs, Va.

20-22 EEI Meter and Service Committee, Hotel Cleveland, Cleveland, Ohio.

23-24 12th Annual National Adequate Wiring Conference, LaSalle Hotel, Chicago, Ill.

23-24 PUAA Region #1 Meeting, Boston, Mass.

MARCH

12-14 Southeastern Electric Exchange Annual Conference, Boca Raton Hotel, Boca Raton, Fla.

12-16 NEMA Winter Meeting, Edgewater Beach Hotel, Chicago, Ill.

18-21 ASME Spring Meeting, Multnomah Hotel, Portland, Ore.

19-22 CEA West Division Meeting, Macdonald Hotel, Edmonton, Alta.

22-23 PCEA Engineering and Operating Section, Palace Sheraton, San Francisco, Calif.

22-23 Oklahoma Utilities Association Annual Convention, Biltmore Hotel, Oklahoma City, Okla.

The EDISON ELECTRIC INSTITUTE
BULLETIN

EEI General and Engineering Committee Activities for 1955-56

YOU AND *YOUR* EEI COMMITTEES

These pages of comments on EEI Committee activities can never do justice to what these and the other EEI Committees really represent. They represent *You*. They represent *Your Company* and its future growth. They represent a year or more of individual and of coordinated efforts in a common goal. They represent hard work—combined digging and solitary digging—leading to the pooling and dissemination of the findings of more than 1500 of the industry's successful and up-and-coming leaders.

Studying ways and means to help the electric industry maintain its unsurpassed record of contributions to the economic growth of the country, committee members spend considerable time away from home and their own work to "kick the ball" around while "thinking out loud" on industry matters. But from this interchange of ideas, their study and resolving of problems, their advancement of new concepts and practices in nearly all phases of electric company operations, they have shown that they are really "ball carriers" coming up with the forward thinking that makes the industry what it is.

As a primary beneficiary of their activities *You* and *Your* company gain not only from the work jointly accomplished by the committees but from the over-all perspective that is obtained by the individual committeeman on a national level, not just that of the local company or department.

Their untiring efforts to serve you carry few rewards other than the knowledge and inner satisfaction of working together to bring about, in the over-all meaning, a better way of life for practically every individual in the country.

These EEI committees are in the profoundest sense *your* committees for the Edison Electric Institute is but the pooling terminus from which committee efforts in behalf of the entire industry and the nation are distributed. With all reason the electric industry can take pride in the accomplishments for the common good which present and a long line of predecessor committees have attained.

PRESENTED in brief form on the following pages are the reports of two groups of EEI Committees outlining the major phases of their activities during the present administrative year.

Committees Total 54

The committees of the Institute now total 54, with a combined membership of more than 1500 representatives of electric companies throughout the nation. Over-all direction of the numerous and diverse activities of the committees is the responsibility of the EEI Board of Directors, under the chairmanship of Harllee Branch, Jr., President of the Institute. The Board also elects the officers of the Institute, sets the policies of the organization and supervises their execution. The Board is composed largely of chief executives of member companies, one-third of whom are elected each year for three-year terms. The Advisory Committee, also composed of members selected from member company executives, acts as consultant to the Institute on matters of industry policy.

HARLLEE BRANCH, JR.
Chairman of the Board of Directors and Institute President

25 Committees Discussed

In this issue the work of the 19 General Committees and the 6 Engineering Committees of the Institute is discussed. Reports of the activities of the Accounting and Commercial Committees will appear in the November issue of the BULLETIN.

General Division Executive Committee

The General Division Executive Committee was authorized by the Board of Directors in December, 1954. Its functions include general supervision and coordination of activities of the General Division Committees. In addition, the Executive Committee, comprising membership from the Board of Directors, with the Vice President of the Institute as Chairman, acts as a policy committee for the Board in matters pertaining to Codes and Standards, Research, Safety, and EEI committee organization and functions.

DONALD S. KENNEDY

The Chairman for the current administrative year is DONALD S. KENNEDY, President, Oklahoma Gas & Electric Co., and Vice President, Edison Electric Institute, and its members are E. W. DOEBLER, President, Long Island Lighting Co.; P. H. MCCANCE, President, Duquesne Light Co., and R. E. MOODY, Chairman of the Board, Union Electric Co. of Missouri.

EEI General Committees

Accident Prevention Committee

The Accident Prevention Committee, under the chairmanship of RAYMOND W. WHITE, Pacific Gas and Electric Co., is continuing the heavy program which it has been following for the past several years. There are 59 companies represented on the committee. To permit wider participation and to accomplish more by subcommittees between full committee meetings, the committee will meet twice instead of three times each year.

A *Hot Line Tool Guide* outlining general procedure in hot line work and the use and care of hot line tools and equipment has been completed and distributed.

A survey of linemen's climbing equipment is continuing, as also is a thorough review and study of grounding practices.

The Visual Aids Subcommittee's completed film, "Hot Weather Hazards," will be shown at the next meeting of the committee.

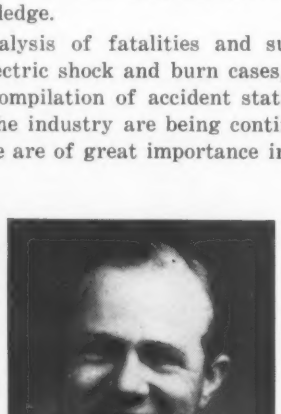
A pamphlet entitled *Manual Resuscitation* is being prepared by the Resuscitation Subcommittee and drafts will be presented at the next meeting of the committee. This subcommittee is also working closely with the staff of Johns Hopkins University on a method of electrical resuscitation to overcome heart fibrillation resulting from electric shock.

The Subcommittee on Motor Vehicle Safety has prepared a report form to secure information for analysis of motor vehicle accidents and to develop specific accident prevention programs therefor.

Liaison with the Transportation, Transmission and Distribution, Prime Movers, and Industrial Relations Committees is being continued. Speakers were furnished for the T and D meeting in New Orleans in September, and the committee is collaborating with Meter and Service on preparation of a pamphlet entitled *Recommended Safety Practices for Electrical Metermen.*

The Round Table Discussion, one of the highlights of the committee's activities, is being revised and, it is believed, will contribute even more to the members' accident prevention knowledge.

Analysis of fatalities and survey of electric shock and burn cases, and the compilation of accident statistics for the industry are being continued. These are of great importance in disclosing where to concentrate accident prevention efforts.



RAYMOND W. WHITE
Chairman of the Accident Prevention Committee

A new subcommittee on Barricading Practices has been appointed to develop uniform practices to protect workmen from energized equipment in work areas by the use of barricade tape. Another new subcommittee will review new safety devices and develop information for the members concerning same.

The primary objective of the Accident Prevention Committee is the continued improvement in accident frequency and severity rates in the industry. The tried and proven subcommittee projects which are assisting in this cause are being continued, and new projects are being developed as the need for them arises.

Chairman RAYMOND W. WHITE has been Manager of the Claims and Safety Department, Pacific Gas and Electric Co., since 1946 and has been with that company since 1933 when he assumed full-time employment while still a college student. At PG&E he has worked in the Bookkeeping, Gas, Law, and Claims and Safety Departments. A member of the EEI Accident Prevention Committee since 1946, he has been active in the Pacific Coast Gas and Pacific Coast Electrical Associations and is a past chairman of the PCEA Accident Prevention Committee. His other activities include work in California Self-Insurers Association, California State Chamber of Commerce, and the Transportation, Communications, and Utilities Section of California Industrial Safety Conference.

Area Development Committee

The activities of the Area Development Committee under Chairman J. R. FREDERICK, Wisconsin Power and Light Co., are expected to be a continuation of the studying, compiling, and exchanging information regard-

J. R. FREDERICK
Chairman of the Area Development Committee

ing area development work of EEI member companies. Since nearly every electric company is showing activities in some of the various phases of area development, this exchange of information and interest in the committee work has increased greatly.

Area development problems of interest to a majority of utilities approached from the utility standpoint with maximum benefits to public relations and improvements of economic levels of areas served will be on the agenda. The committee's program will be one of effective consideration of these problems with dissemination of and exchange of information to assist in solving these problems.

The committee met in St. Louis, Mo., on October 10 for an organizational session where assignments for the administrative year were made. On the two days following, October 11 and 12, an Area Development Workshop was held. This workshop, under the leadership of J. EUGENE JOHANSON, Union Electric Co. of Missouri, featured not only talks by prominent authorities from both within and outside the industry, but had about half the time devoted to round table discussions for the free exchange of information on the various subjects. This workshop was in response to requests for continuation of similar programs held in past years, the last previous one being at Cleveland in 1954.

The over-all objective of preparing information and materials members would like to help in their area development problems will be attacked by consideration of the following items:

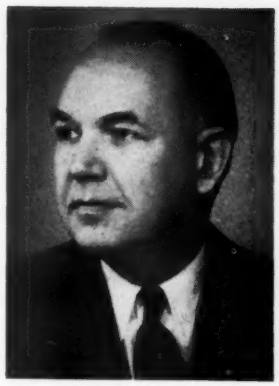
1. Preparation of an Area Development Manual approached from the utility standpoint and for utility company use.
2. Industrial and business development techniques to improve the service area economy; location of new business and industry.
3. Problems of zoning and re-zoning for community development and redevelopment.
4. How to best deal with natural resources and their development to improve economic health.
5. Best approaches to water and soil conservation problems and agricultural development from the utility standpoint.
6. Working with communities for their improvement and development and making them attractive to business and industry.
7. Working with area people on travel, tourist, and recreation development.

This exchange of information, preparation, and development of materials is expected to be designed for use in the training of area development personnel, in the evaluation of the various segments of area development, and in setting up company activity in the field.

Chairman JOHN R. FREDERICK, in his capacity of Director of Industry Development for Wisconsin Power and Light Co., heads his company's area development work. A graduate of Armour Institute of Technology, he was a cadet trainee in the Chicago Central Station Institute prior to joining the Wisconsin company in 1926 as a cadet engineer. He has subsequently held the positions of assistant district manager, industrial power sales engineer, commercial and industrial engineering supervisor, and since 1949 director of industry development. Long active in EEI committee work, he is a registered Professional Engineer and is publications chairman for the Wisconsin Society of Professional Engineers.

Atomic Power Committee

The Atomic Energy Act of 1954, which contains a number of points recommended by the Institute, was signed into law on August 30, 1954. Since that date there has been a sharp upswing in the extent of private effort in this field and this upswing can be expected to become even more pronounced in the future. As a result of the new law, a number of investor-owned utility companies have proposed spending large sums of money for construction of demonstration-type nuclear power plants.



E. H. DIXON
Chairman of the Atomic Power Committee

The Atomic Power Committee has intended to disseminate to the EEI membership from time to time pertinent information on the subject of atomic power and related developments. However, in view of the rather complete coverage which atomic power developments have received in the press and in other regular information sources, the committee has not yet seen the need to make such a dissemination. Nevertheless, the members of the committee are continuing to keep abreast of developments in this field and will transmit to the members of the Institute any information of general importance which is not otherwise available through established sources. At the 1955 EEI Convention, E. H. DIXON, President of Middle South Utilities, Inc., and Chairman of the Atomic Power Committee, presented a progress report on industry's response to the challenge of nuclear power.

Chairman E. H. DIXON has been President and Director of Middle South Utilities, Inc., since 1949, when it was formed following the reorganization of Electric Power & Light Corp. He had been president of the latter company since 1944, having served it and the United Gas Corp., both units in the Electric Bond & Share Co. system as secretary, treasurer, director, and vice president. Mr. Dixon participated in the formation of Electric Energy, Inc., and is now serving as vice president and director of that company. He has been active on EEI committees for a number of years.

Committee on Regulation

The Committee on Regulation, under Chairman J. E. CORETTE of The Montana Power Co., will continue the program for which it was created, which is to consider and advise the membership on questions of industry policy pertaining to regulation and

J. E. CORETTE
Chairman of the Committee on Regulation

legislation affecting the electric industry.

The committee will study the various bills pending in the present Congress and will report on their beneficial or detrimental effect on the industry.

Besides Mr. Corette, other members of the committee are R. H. GERDES, Pacific Gas and Electric Co.; D. S. KENNEDY, Oklahoma Gas & Electric Co.; I. L. MOORE, New England Electric System; WALTER H. SAMMIS, Ohio Edison Co., and J. R. WHITING, Consumers Power Co.

Chairman J. E. CORETTE, President and General Manager of The Montana Power Co., attended Montana State University and holds a law degree from the University of Virginia. After practicing law for four years, he became general counsel of The Montana Power Co. in 1934. Ten years later he was elected vice president and assistant general manager. He became a director in 1948 and president and general manager in 1952. He is also vice president and managing director of Canadian-Montana Pipeline Co. and Canadian-Montana Gas Co., Ltd., subsidiaries of Montana Power. Mr. Corette is a director of the EEI as well as of the National Association of Electric Companies and the National Association of Manufacturers.

Committee on Technical Assistance for Overseas Visitors

The Committee on Technical Assistance for Overseas Visitors which will be under the chairmanship of HARVEY E. BUMGARDNER, The Detroit Edison Co., was organized in July, 1954, to assist on an industry-wide basis in the preparation of suitable programs for visits to the electric power companies in this country of groups or persons associated with power systems in overseas countries. It cooperates with the International Cooperation Administration and other organizations concerned with the various phases of technical exchange programs for overseas electric power visitors.

It also assists executives of EEI member companies in making contacts for overseas visits with electric power people.

Member companies are being contacted for their cooperation as participants in technical exchange programs and for designation of a contact person for such matters.

The other members of the committee are L. HAROLD ANDERSON, Pacific Gas and Electric Co.; HAROLD E. DEARDORFF, The Dayton Power and Light Co.; and WILLIAM M. LEONARD, Consolidated Edison Co. of New York, Inc.

Chairman HARVEY E. BUMGARDNER, Assistant to Vice President and Controller at The Detroit Edison Co., also served the company as Coordinator of Technical Assistance Programs. The University of Michigan graduate joined Detroit Edison in 1924 as a junior engineer and two years later became research engineer in charge of the Mechanical Division, serving as such until assuming his present position. Mr. Bumgardner is a consultant to the International Cooperation Administration and in that capacity visited Europe in 1952 and 1954 to inspect the operations of Great Britain's Central Electricity Authority and to study ICA's accomplishments. He is past chairman of the Detroit Section of the ASME and a member of the Engineering Society of Detroit, American Management Association and National Industrial Conference Board.

Electric Power Survey Committee

Keeping in close touch with the current and projected electric power situation in the United States and informing the industry and others accordingly is a responsibility of the Electric Power Survey Committee of which ARTHUR S. GRISWOLD, The Detroit Edison Co., is chairman, and CLARENCE W. MAYOTT, The Hartford Electric Light Co., is vice-chairman.

With the ever-increasing demands for electricity and its vital importance to the country's economy, national security, and the well-being of its people, it is essential that probable requirements of the years ahead be kept in continuous focus to be sure that new facilities being planned and constructed will be available as the increased needs materialize.

Cooperating with the committee in carrying out its task are representatives of the power systems, or power areas, across the country and the nation's principal manufacturers of heavy electric power equipment.

HARVEY E. BUMGARDNER
Chairman of the Committee on Technical Assistance for Overseas Visitors

Twice each year, in April and October, the power system representatives furnish up-to-date estimates of peak loads, peak generating capabilities, and energy requirements pertaining to their respective systems for the current and the following three years. They also supply information with respect to new generating facilities, planned or under construction, together with the dates of expected commercial operation of each unit. The equipment manufacturers keep the committee informed concerning production schedules, new orders received, scheduled delivery dates, and estimates of open manufacturing capacity.

At the time of the semi-annual surveys, load and capability estimates prepared by the power systems are thoroughly reviewed and coordinated after which they are combined to show the estimated situation for the country as a whole and for the eight power supply regions into which the country is divided. The program of expansion of generating facilities is prepared from the information supplied by the power systems and the equipment manufacturers.

Within a few weeks after the date of each survey, the committee issues its semi-annual report, thus making promptly available the latest and most up-to-date information concerning the present and estimated future power situation.

Records of equipment manufacture and estimated operating dates of new power projects are maintained on a continuous basis and quarterly reports are prepared for the benefit of the committee members, power system

representatives, and the equipment manufacturers. Relations with the manufacturers are under the direction of F. DOUGLAS CAMPBELL, The Detroit Edison Co.

A subcommittee on Continuity of Service Protection, organized in 1949 and now under the chairmanship of PAUL W. METCALF, Narragansett Electric Co., is presently concerned with matters relating to Civil Defense Activities. Discussions planned with the Civil Defense Authorities will deal with the role to be played by the power systems in the event of air raid warnings or attack and will be directed toward the possible formulation of a general industry policy.

Chairman ARTHUR S. GRISWOLD is Assistant to the President at The Detroit Edison Co. with which he has been associated since graduating from Cornell University as a mechanical engineer in 1922. During World War II he served for three and one-half years with the WPB Office of War Utilities as chief of the Turbine and Condenser Section of the Equipment Division. In 1948 he became consultant on electric power for the Economic Cooperation Administration and the present Mutual Security Agency and has continued to be active in matters related to the power aspects of government technical-assistance programs. As assistant to the president of Detroit Edison, he is active in the atomic energy project being carried on by Dow Chemical Co., Detroit Edison and a group of associated companies.

Financing and Investor Relations Committee

The Financing and Investor Relations Committee, under the chairmanship of W. J. ROSE, American Gas and Electric Service Corp., will continue to report to the EEI membership relating to financial matters, including new ideas and new methods of making common stock offerings to stockholders and employees. The committee will also endeavor to keep member companies informed on various developments in investor relations. The distribution of schedules of proposed financings will be expanded to include estimates for a two-year period, and the results of actual sales of securities will be continued.

It is hoped that at least two meetings of the full committee will be held during the coming year for the purpose of round-table discussions of financial problems.

Chairman W. J. ROSE has been secretary since 1949 and vice president since 1952 of American Gas and Electric Co. He also is vice president, secretary, and a director of AGE Service Corp. and the company's subsidiaries. Prior to joining AGE in 1938, Mr. Rose was with Stone & Webster Securities Corp. and Stone & Webster Service Corp. Widely-known in financial circles, he has been chiefly responsible for all the major financing operations carried out in recent years by American Gas and Electric and its subsidiaries.

Industrial Relations Committee

The service which the Industrial Relations Committee is trying to provide under the chairmanship of JOHN C. ARNELL of Consolidated Edison Co. of New York, Inc., is to provide advance knowledge for forward planning in employee relations.

Because employee relations are vital and dynamic, they are subject to constant change. Much of the change that takes place comes from the research, trials, experiences, and collective bargaining of employers. Some of the change, particularly in the interpretation of "wages, hours, and conditions of employment," comes from the courts and the National Labor Relations Board. To keep the electric light and power industry abreast of these changes and to show how it is specifically affected by them is the prime concern of the Industrial Relations Committee.

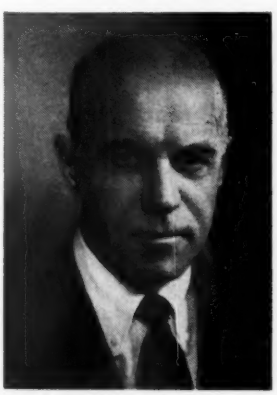
This program is implemented in several ways. The committee sponsors surveys on a number of subjects which are susceptible to this type of exposition. Another method is through the medium of discussion and conference meetings of two different types. Eight of these meetings are scheduled for the year 1955-56. Finally, the committee sponsors an industry-wide Annual Round Table Conference on Industrial Relations.

Five of the eight meetings are strictly Industrial Relations Committee meetings. With the exception of one, all of these committee meetings will be held at EEI headquarters in New York during 1955-1956. These are one-day meetings at which prepared papers are presented, followed by a discussion period. Other items on the agenda are subcommittee reports, new business, and a round robin discussion of current developments in the industrial relations field.

The other three meetings are two-day sessions co-sponsored by the Industrial Relations Committee and a regional group or groups. The first day is devoted to formal programs covering subjects of interest to the co-sponsors. On the second day each group usually holds a separate meeting of its own, which in the case of the Industrial Relations Committee follows the format of its regular meetings. These joint meetings have several important benefits beyond the formal program. They permit the regional group to become familiar with the attitudes of the national group and vice versa. Moreover, the personal contacts established stimulate a freer exchange of information in the future.

The Annual Round Table Conference is a three-day session with the dual function of providing a medium of exchange of information on four selected broad industrial relations topics each year and of providing for the training of younger personnel staff men and line operators in the art of employee relations. On the

ARTHUR S. GRISWOLD
Chairman of the Electric Power Survey Committee



W. J. ROSE
Chairman of the Financing and Investor Relations Committee

JOHN C. ARNELL
Chairman of the Industrial Relations Committee

opening morning, leading utility industrial relations men discuss the background of these four topics. Then in small "How-To-Do-It" conferences, the participants exchange experiences, thereby learning how the other fellow does it. In addition, each day's luncheon session is addressed by an outstanding utility executive. This conference sets an informal but effective stage for the development of a closer personal relationship between representatives from all over the country.

Thus the Industrial Relations Committee through its program of meetings, conferences, and surveys, helps to keep the industry alert to significant developments in the vital area of employee relations.

Chairman JOHN C. ARNELL, Director of Industrial Relations for Consolidated Edison Co. of New York, Inc., was employed by a predecessor company in 1926 upon his graduation from Polytechnic Institute of Brooklyn. Most of his 29 years with the Consolidated Edison System have been devoted to industrial and labor relations, and he has been active in collective bargaining relationships since the establishment of the first bargaining unit in the system more than 20 years ago. He has served for ten years with the Engineers' Council for Professional Development and for two years was Chairman of the Committee on Professional Training. During World War II, Mr. Arnell served as an Industry Panel Member of the Regional War Labor Board.

Insurance Committee

The Insurance Committee keeps abreast of developments in all of the many forms of insurance and attempts to influence these developments in every proper and reasonable way so as to best meet the general and special needs of the electric utility industry.

Under the chairmanship of R. D. CONSTABLE, Niagara Mohawk Power Corp., projects already under way will continue to be progressed.

A subcommittee is keeping in close touch with insurance problems arising out of the rapidly arriving use of atomic energy for power production. Efforts will be continued to obtain simplification in the boiler and machinery insurance contracts and other improvements in this field, in cooperation with the American Gas Association Insurance Committee. Current interest in insuring boiler and machinery objects on a "repair and replacement cost" basis and also in a more realistic approach by the domestic market to machinery breakdown coverage on an excess basis, suggests additional fields of activity for this subcommittee.

A joint subcommittee consisting of representatives of the Electrical Equipment, Prime Movers, and Insurance Committees will continue to function as a coordinating committee in the important field of fire protection and prevention.

A satisfactory market for storm damage coverage on transmission and distribution lines has never been developed. Indications in recent years that the entire east coastal area may have become subject to frequent hurricane visitations suggests that the possibility of developing satisfactory protection of this type should be thoroughly explored. A subcommittee is actively engaged in surveying this situation at the present time and will report as soon as possible. Flood conditions in large areas of the northeast indicate the probability that Congress will again consider the subject of flood insurance in some form and the insurance committee will again closely watch any developments in this area.

R. D. CONSTABLE
Chairman of the Insurance Committee

D. BRUCE MANSFIELD
Chairman of the Legal Committee

The market for excess or large deductible fire insurance has been slowly developing for some years. Present indications are that this market has now expanded materially and may present possibilities of considerable interest to the utility industry. The committee plans to keep closely in touch with this development.

D. E. Williams, The Cleveland Electric Illuminating Co., has agreed to continue as secretary of the committee for the ensuing year.

Chairman R. D. CONSTABLE has been Manager, System Insurance, of Niagara Mohawk Power Corp. since 1942 in which capacity his responsibilities include the fields of group insurance and pensions as well as general insurance. Prior to entering the utility business he had been in the fire insurance field for some 15 years as special or state agent in New York State, following earlier home office training in New York City. He is a recent past Chairman of the Insurance Committee of the AGA and a member of the Workmen's Compensation Committee of Associated Industries of New York State.

Legal Committee

The Legal Committee, the chairman of which is D. B. Mansfield, Ohio Edison Co., was created to study and exchange information pertaining to matters handled by counsel for the participating companies.

In addition, in the past the committee has followed the practice of studying and reporting on to the Institute particular matters which may be referred to it by the Institute or by any of the other EEI Committees. It is proposed to continue this practice.

The next meeting of the Legal Committee will be held November 11-12 at Sea Island, Ga., and the agenda for that meeting is now in preparation.

Chairman D. BRUCE MANSFIELD has been General Counsel for Ohio Edison Co. since 1948. He received his AB at Kenyon College in 1930, his LLB at Duke University in 1933, and his JSD at Yale University in 1935. From 1934 to 1938 he was a professor of law at Temple University, leaving to serve as senior attorney of the Public Utilities Division of the Securities and Exchange Commission. In 1940 he was associate professor of law at the University of California. From 1941 to 1948 he was engaged in general law practice in Canton, Ohio. Mr. Mansfield has been a member of the EEI Legal Committee since its organization in 1950 and is a member of the Public Utility Law Section Council of the American Bar Association and former chairman of its Standing Committee. He is also a member of the Summit County, Ohio State, and American Bar Association.

Membership Committee

The Membership Committee, which has as its chairman E. S. THOMPSON, The West Penn Electric Co. (Inc.), reports and makes recommendations directly to the EEI Board of Directors on applications for membership in the Institute.

The examination of these applications is the primary function of the Membership Committee which also is composed of A. D. BARNEY, The Hartford Electric Light Co.; H. P. LIVERSIDGE, Philadelphia Electric Co.; G. F. NEFF, Wisconsin Power and Light Co.; and H. R. SEARING, Consolidated Edison Co. of New York, Inc.

Chairman EARLE S. THOMPSON is President and Director of The West Penn Electric Co. (Inc.). A trustee and 1914 graduate of Bowdoin College, he served with the National Fire Insurance Co. and Hornblower & Weeks before joining the American Waterworks and Electric Co. in 1923. In 1938 he was elected president and director of the latter company, predecessor of West Penn Electric. Among the companies of which he is a director are Monongahela Power Co., Potomac Edison Co., Windsore Coal Co., West Penn Railways, City Bank Farmers Trust Co., and Ritz Carlton Hotel. He is also a trustee of the Dry Dock Savings Bank.

EARLE S. THOMPSON
Chairman of the Membership Committee

GEORGE W. OUSLER
Chairman of the Prize Awards Committee

Prize Awards Committee

The Prize Awards Committee, under the chairmanship of G. W. OUSLER, Duquesne Light Co., conducts all EEI-sponsored prize contests except the Charles A. Coffin Award and the Reddy Kilowatt Annual Report Award. The committee appoints contest judges and seeks to attain the widest possible participation in each competition. In addition, it reviews all new prize awards offered for EEI sponsorship by various donors. A detailed description of the 1955 awards, to be presented at the EEI Sales Conference and the Annual EEI Convention, appeared on page 308 of the September BULLETIN.

Chairman GEORGE W. OUSLER is Vice President of the Duquesne Light Co. Following his graduation from Massachusetts Institute of Technology in 1916, he entered the employ of the engineering department of Duquesne Light where his subsequent positions in engineering and sales capacities included those of director of sales engineering, manager of rates and retail sales, and general sales manager. He was named vice president in charge of sales in 1942.

Long active in EEI committee work, Mr. Ousler served for two years as commercial division chairman. He is also a former president of the Pennsylvania Electric Association.

Purchasing and Stores Committee

The Purchasing and Stores Committee has as its chairman W. M. HOLLS, Baltimore Gas and Electric Co. E. N. SCOTT, Long Island Lighting Co., is serving as vice chairman of purchasing, and T. S. DUNSTAN, Consolidated Edison Co. of New York, Inc., as vice chairman of stores. The other members of the Executive Committee are: G. H. COLE, Alabama Power Co., Secretary of the committee; J. B. HOMSHER, Gilbert Associates, Inc.; G. C. MEETZE, South Carolina Electric & Gas Co.; R. C. WENZ, Duquesne Light Co.; R. A. CLARK, The Detroit Edison Co.; H. T. SIMPSON, Boston Edison Co.; and Past Chairman C. H. ZUR NIEDEN, Philadelphia Electric Co.

The committee is composed of 83 active members.

During the year the committee plans to study for presentation at the annual meeting the following subjects: Fuel Purchases and Related Traffic; Developing Fly Ash Outlets; Departmental Interests and Influences in Purchases; Traffic and Expediting Procedures; When and How to Purchase; Stock Control; Methods of Measuring Performance in Stores Operations; Accumulation, Handling, Grading and Sales of Scrap; Handling and Storing of Problem Materials, which subject will be presented by projecting photos, furnished by the membership, of special handling and storing equipment, and of methods of handling and storing problem material with conventional equipment.

The Standard Packaging and Nomenclature Subcommittee, with H. E. HODGSON, Wisconsin Power and Light Co., Chairman, which has effected outstanding economies for manufacturers and consumers in the packaging of pole line hardware, will undertake applying these principles to insulator packaging.

The annual meeting of the committee is scheduled for May 7, 8, and 9, 1956, at the Sheraton Plaza Hotel in

W. M. HOLLS
Chairman of the Purchasing and Stores Committee

CHARLES A. WILLIAMS
Chairman of the Rate Research Committee

C. W. FRANKLIN
Chairman of the Research Projects Committee

FRANCIS A. KEANE
Chairman of the Statistical Committee

Boston, Mass. The Boston Edison Co. will serve as host for the meeeting, and a program of interesting and varied activities is being planned.

Chairman W. M. HOLLS is General Storekeeper of the Baltimore Gas and Electric Co. Except for service in World War I, his career has been entirely in the stores field since 1913. After serving in various capacities in the Stores Department, he was named to his present post in 1938. He has been active in the EEI Purchasing and Stores Committee for a number of years and was vice chairman of the committee last year. He is also a member of the Maryland Utilities Association.

Rate Research Committee

The Rate Research Committee, with CHARLES A. WILLIAMS, The United Illuminating Co., as chairman, will continue its discussion of technical and economic subjects during the coming year and will exchange information on rate matters.

A special group of members has been formed to stimulate and lead discussion of the fundamentals of rate making. Such discussion is needed to guard against unsound theories and principles that may creep into rate making practice from time to time.

Residential load developments indicate a great need for further knowledge of load characteristics, both of appliances and of typical homes with various electrical uses. Summer air conditioning is one of the uses which accentuates the need for more load research. Winter house heating is another. The characteristics of these uses, both of which have tremendous potential, are important elements in any evaluation of this business. The committee plans to encourage the obtaining of more residential load data.

Review of important rate cases will be continued, as well as the exchange of information on rate changes and trends in rate making. Special attention will be given to developments in electric water heating.

Plans call for three meetings during the year, the first of which will be held in Pittsburgh in October.

Chairman CHARLES A. WILLIAMS, Vice President of The United Illuminating Co., joined the Distribution Department of Philadelphia Electric Co. in 1922 upon graduation from Massachusetts Institute of Technology. He was later employed by Charles H. Tenney & Co., Boston, Mass., and by New England Power Association, where he became rate engineer. In 1939 he moved to New Haven, Conn., and has held his present position since 1940.

Research Projects Committee

Among the objectives of the Institute is one which includes the promotion of scientific research in the field of producing, transmitting, and distributing electricity. The Research Projects Committee was formed some years ago to further this objective. The committee is again this year under the chairmanship of C. W. FRANKLIN, Consolidated Edison Co. of New York, Inc., and is composed of 11 other continuing members.

The activities of the committee include following major research programs of interest to the electric utility industry, encouraging the development of research programs of importance to the industry by the committees of the Institute, screening all projects proposed for EEI contributions and recommending approval by the Board of Directors of meritorious projects, and maintaining general supervision of technical progress and the administration of funds approved for programs in which the EEI participates.

In its capacity as a review board, the committee receives proposals for EEI sponsorship from other Institute committees, technical and professional organizations, educational institutions, individual investigators, and other sources. Projects not originating in EEI committees are referred to the appropriate EEI group for investigation and recommendation before final action is taken by the Research Projects Committee.

The criteria applied by the committee to suggested programs are directed toward selecting only those projects that are of importance to the industry at large, avoiding duplication of effort, and insuring a continued application of research effort in the direction of the industry's interests. To allow the committee to evaluate proposed projects on these bases, the program prospectus for each project includes statements of objectives, need to the industry, time and cost estimates, and proposed arrangements for direct supervision of the research.

The several projects now under way cover subjects sponsored or participated in by EEI on recommendation of the Accident Prevention, Accounting, Prime Movers, or Transmission & Distribution Committees.

Chairman C. W. FRANKLIN has been Electrical Engineer of Consolidated Edison Co. of New York, Inc., since 1940. Since graduating from Georgia Institute of Technology in 1915, his entire business career has been spent with Con Edison and its predecessor organizations. Prior to assuming his present duties, Mr. Franklin served in various capacities in the Construction, Operating, and Engineering Departments of Con Edison.

Statistical Committee

The Statistical Committee, which is chairmaned this year by FRANCIS A.

KEANE, Public Service Electric and Gas Co., will continue this year its efforts to improve the annual EEI *Statistical Bulletin* covering statistics of the electric utility industry in the United States. Projects of the committee which will be reviewed include the weekly electric output index and the glossary of electric terms published last year.

Additional projects which the committee will consider include employee and payroll statistics, budgets, operating and financial ratios, and intercompany comparative statistics.

The first meeting of this committee was scheduled for October 27 and 28, 1955, in Skytop, Pa.

Chairman FRANCIS A. KEANE, Assistant to the President of Public Service Electric and Gas Co. since May, 1955, had been an assistant comptroller of the company since 1945. He started with Public Service in 1923 and has held various positions in the Statistical and Comptroller's Departments of the company. Mr. Keane has a BS degree in civil engineering from New York University and a master's degree in business administration from New York University's Graduate School of Business Administration.

Tax Policy Committee

The broader aspects of taxation affecting electric utility companies is studied by the Tax Policy Committee, for which the chairman will be announced at a later date.

Among the tax matters which receive the attention of this committee, in addition to those taxes which directly affect the companies, are double taxation wherein taxes are paid in dividends by investors, the correction of the existing unfairness to customers of the privately-owned electric companies by the removal of tax exemptions of securities issued by governmental proprietary power businesses, and tax questions affecting industry in general.

RANDOLPH WHITFIELD
Chairman of the Transportation Committee

The Tax Policy Committee also keeps informed on the tax studies and policies of other trade organizations.

Membership of this committee includes A. M. BEEBEE, Rochester Gas & Electric Corp.; C. P. CRANE, Baltimore Gas and Electric Co.; E. H. DIXON, Middle South Utilities, Inc.; R. H. GERDES, Pacific Gas and Electric Co.; J. E. LOISEAU, Public Service Co. of Colorado; C. B. MCMANUS, The Southern Co.; C. E. OAKES, Pennsylvania Power & Light Co.; and, ex officio, H. M. HOBSON, Public Service Electric and Gas Co., Chairman of the Taxation Accounting Committee.

Transportation Committee

The Transportation Committee, of which the chairman will be RANDOLPH WHITFIELD, Georgia Power Co., works jointly with the American Gas Association's Automotive and Mobile Equipment Committee and has functioned in this manner for many years.

The 14th Joint Conference on Public Utility Fleet Operation was held April 12-15 at Cincinnati, Ohio, as a cooperative project with the AGA. This conference was attended by 150 public utility fleet men from all sections of the country. At this meeting the solution to mutual problems was discussed, and papers on timely subjects were presented by fleet operators and the engineers of major suppliers.

The annual "Workshop" meeting of this committee, together with the corresponding AGA Committee, was held in Chicago September 12-14, at which time plans were laid for the year's subcommittee activities and for the 15th Motor Vehicle Conference, which is scheduled for Chicago, Ill., in the Spring of 1956.

Standing subcommittees are unchanged from last year as to the scope of their activities. One subcommittee deals with Vehicle Selection, Utilization and Retirement, the second with Driver Training and Safe Operating Practices, and the third with Maintenance Procedures and Facilities.

Chairman RANDOLPH WHITFIELD has general supervision of Georgia Power Co.'s fleet of motor vehicles. A native of Florida, he was graduated from the Georgia Institute of Technology with BS and MS degrees in mechanical engineering. Before joining Georgia Power in 1934 he worked for the Ford Motor Co. and for General Motors Corp. During World War II, he served as automotive consultant to the U. S. Army and maintenance consultant to the Office of Defense Transportation. He is a licensed professional engineer in Georgia and a member of the Georgia Engineering Society and the Society of Automotive Engineers, having served as head of the latter organization in Atlanta.

EEI Engineering Committees

Engineering Division Executive Committee

The Engineering Division Executive Committee, whose chairman this year is E. L. HOUGH, Union Electric Co. of Missouri, serves as a coordinating agency for the activities of the five engineering committees which constitute the Engineering Division and deals with engineering matters of a more general nature than those covered by the other committees. The committee membership consists of the chairmen of the five engineering committees and 16 members-at-large.

This committee is responsible for the general guidance of the five engineering committees in policy matters and for correlating their work in order to avoid duplication of effort. The committee has a Codes and Standards Correlating Subcommittee, of which P. H. CHASE, Philadelphia Electric Co., is chairman. This subcommittee considers matters of standardization, particularly where coordination is desirable between different groups of electric company representatives working on correlated subjects, such as National Codes developed under the auspices of the American Standards Association. Under the new Committee on Committees policy this subcommittee will have increased responsibilities in assisting the chairman in giving general direction to the joint

engineering activities with other associations.

Chairman E. L. HOUGH has been Vice President and Chief Engineer of Union Electric Co. of Missouri since 1953. A 1922 graduate of the University of North Dakota, he joined Union Electric as an electrical engineer in 1928 after spending six years with General Electric Co. With Union Electric, he became chief design engineer in 1943 and chief engineer in 1951. A fellow of AIEE, Mr. Hough has been a member of the Electrical Equipment Committee and the Engineering Division General Committee before becoming chairman of the latter.

Electrical Equipment Committee

The Electrical Equipment Committee is planning its activities and programs for the coming year under the same organization as last year. C. L. DERRICK, The Hartford Electric Light Co., as chairman, and H. E. DEARDORFF, The Dayton Power and Light Co., as vice chairman, continue these respective assignments into their second year.

The Apparatus and Design Subcommittee, under the guidance of STANLEY C. TOWNSEND, Pennsylvania Power and Light Co., will continue its presentations of papers reflecting design trends of the electrical features of generating stations, switching stations, and substations. The impact of larger and larger central station generating units and the continuing trend to increased use of outdoor equipment will be reflected in the problems and presentations of this phase of the committee's work. Quite a group of the committee's members is active on ASA committees studying standards for electrical equipment, and it would appear that the coming year will be a busy one on these projects affecting apparatus and design. Toward the end of last year arrangements were completed for the establishing of a joint EEI-NEMA Subcommittee to thoroughly investigate the subject of transformer noise and this study will proceed actively during the coming year, with L. J. GILL, Pennsylvania Power and Light Co., heading the EEI group.

E. L. HOUGH
Chairman of the Engineering Executive Division Committee

It is expected that one of the most interesting and valuable contributions of the committee will continue to be the closed sessions presented at each meeting by D. W. TAYLOR, Public Service Electric and Gas Co., who heads the System and Apparatus Troubles Subcommittee. While it is hoped that there will not be a repetition of the large turbo generator failures that featured last year's program, it is still obvious that electrical equipment troubles will continue and the presentations of the causes and cures for these troubles are valuable to the entire industry in effecting improvements in the art.

A. V. DEBEECH, Canadian-Brazilian Services of Toronto, continues as chairman of the Subcommittee on Foreign Practice, and intensive consideration of the program of this phase of the work is now under study by the Executive Committee so that a more effective interchange of information with our foreign friends may result.

The Operation and Maintenance Subcommittee, under the direction of R. M. PENNYPACKER, Philadelphia Electric Co., is concentrating at the moment on a very complete and comprehensive study of inspection and maintenance practices for all types and sizes of switchgear. A symposium was held at the May meeting on the lower voltage circuit breakers and a similar program is planned for the October meeting covering air blast circuit breakers. Organization of a joint committee on fire protection matters was completed last year with the Insurance Committee of the EEI and progress has been made in coordinating the mutual interests of these two groups.

Mr. Deardorff will continue as chairman of the System Engineering Subcommittee, whose outstanding activity is now centered around the System Planning Subcommittee headed by R. G. MEYERAND, Union Electric Co. of Missouri. The System Planning Subcommittee is holding regular sessions coincident with the meetings of the main committee and has not only effected an efficient organization to handle the several projects assigned to this group, but has made considerable progress in establishing basic principles and guides for orderly and sound system planning. Reports from the several sponsors of this project will feature the system engineering program during the coming year. Plans are also under way for presenting other committee reports on several of the latest developments in load control and economy operation of main units and transmission lines, based on the use of electronic calculators and computers.

The first meeting for the coming year was held in Washington, D. C., on October 17 and 18 and a feature of this meeting was an inspection trip to some of the residential substations of Potomac Electric Power Co., the design and treatment of which has caused considerable interest throughout the industry. The mid-winter meeting of the Committee is planned for the middle of February at the "Homestead" in Hot Springs, W. Va., and the May meeting will be held in Chicago, Ill., in conjunction with the other engineering committee meetings.

Chairman CHARLES L. DERRICK, Vice President of The Hartford Electric Light Co., is a 1923 electrical engineering graduate of Lehigh University. Prior to joining Hartford Electric Light in 1942 as assistant engineer, he served in various engineering capacities for Public Service Electric and Gas Co. for 19 years. He next served the Hartford company

C. L. DERRICK
Chairman of the Electrical Equipment Committee

as superintendent of engineering, becoming assistant to the vice president in charge of operating departments in 1950 and assistant vice president in 1951. Later in 1951 he assumed his present duties. In addition to EEI committee work, Mr. Derrick is a member of AIEE and a former president of the City Club of Hartford, Conn.

Hydraulic Power Committee

The Hydraulic Power Committee, which has L. B. CARD, Public Service Co. of Colorado, as its chairman, devotes its activities to the study of the design, construction, operation, and maintenance of all hydraulic and mechanical apparatus and equipment used in hydro-electric plants, including reservoirs, dams, buildings, and auxiliary structures or devices. Its interests also include studies and dissemination of information pertaining to weather modification programs and accurate weather forecasting, all of which affect operations. The membership of the committee consists of representatives of utilities and industrial and engineering organizations located throughout the United States.

The committee customarily holds one meeting a year and the meeting this year was held in Atlanta, Ga. In line with the policy of meeting every other year in Chicago in conjunction with the joint engineering committees' meeting, the Hydraulic Power Committee will meet in Chicago in 1956, then in some other region in the United States the following year.

The committee completed a report covering Hydraulic Turbine and Draft Tube Settings, which should be of considerable value to the hydraulic industry, and a study has been started on Allowable Vibration in Hydraulic Turbines, which also should be of value.

The committee is continuing its investigation of weather modification through cloud seeding. A cloud seeding program is being carried on in Japan, and a request for exchange of information has been received from that country.

Other problems with which the committee is concerned include water hammer and associated problems in steam station condensing water lines, utilization of fly ash in concrete work, trash racks and trash handling, economics of underground power houses, latest developments in hydro-electric equipment including governing mechanisms, remote control of small hydro plants, and numerous general operating and maintenance problems.

L. B. CARD
Chairman of the Hydraulic Power Committee

Chairman L. B. CARD, Superintendent of Hydro Production for Public Service Co. of Colorado, holds a BS and MS degree from the University of Colorado. After service with the Cities Service Co., he joined the Public Service Co. of Colorado in 1935 as an engineer in the Hydro and Transmission Department, and later became hydro engineer dealing with such problems as restoration of concrete dams, water hammer, and penstock design. In 1953 he assumed his present duties. In addition to EEI committee work, he is past chairman of Rocky Mountain Section of ASME and a member of the Colorado Engineering Council and Colorado Society of Safety Engineers.

Meter and Service Committee

The Meter and Service Committee, under its chairman, GEORGE J. YANDA of The Cleveland Electric Illuminating Co., and its vice chairman, FLOYD SALMON of Central Power and Light Co., will generally follow the pattern established by this committee in recent years. It meets jointly with the AEIC Committee on Metering and Service Methods twice each year. In addition, it meets every other year at Chicago with other EEI Engineering Committees. Increased attention is being devoted to the proper geographical distribution of meeting locations in order to continue a maximum degree of interest in development activities. Active members total 54, with an additional 35 correspondents participating.

The only change in committee organization or operation required as a result of the review of policy by the Board of Directors during the past year involved a change in title of the four former divisions to subcommittees. The committee is comprised of these four subcommittees which are assigned subjects within the service equipment, meters and metering equipment, codes and rules, and meter department management. Subcommittee chairmen make subject assignments to specific individuals within the subcommittee who function as subject chairmen on such matters. Rotation of such assignments is provided for in the case of long term studies.

Nearing completion at present is the joint EEI-AEIC-NEMA *Standards for Single Phase Watthour Meters*. Active subjects of a continuing nature remain at a high level. Included here are metering equipment connections between brass, copper, and aluminum, large capacity low-voltage metering installation methods, corrosion prevention, new developments in municipal and state wiring legislation, new or revised state commission rules involving metering or service matters, and changes or revisions in national codes. Considerable effort is also being directed toward obtaining the views of other EEI committees through mutual discussions of common problems.

The committee is actively engaged in revision of previously published *Standards for Indicating Demand Registers* (MSJ4), *Specifications for Indicating Thermal Watt-Demand Meters* (MS5), and *Standards for Watthour Meter Sockets* (MSJ7). The second item will be adopted as a joint standard after revision, while the remaining two are presently joint EEI-AEIC-NEMA standards.

Subjects recently completed include *Compilation of Service Rules*, *Meter Obsolescence* and *High Voltage Metering Installations*. Other subjects being

GEORGE J. YANDA
Chairman of the Meter and Service Committee

actively engaged in involve the revision of EEI publication *Recommended Safety Practices for Electric Metermen*, collection of meter performance data with a view toward developing and maintaining a modern metering system, study of meter department records for simplification purposes, compilation on scheduling and reporting of demand meter performance for the purpose of recommending a uniform method of reporting, and the selection and training of metering personnel.

New studies recently added include the revision of EEI publication C10 *Symbols for Metering Diagrams* and a study of current transformer accuracy classes for the purpose of proposing a revision of ASA C57.13 in order to establish a relationship between the continuous thermal rating factor and the accuracy class of a current transformer.

The committee will meet three times during the present administrative year the first of which was held at Syracuse on October 3-5, 1955. In February, 1956, the meeting will be held in Cleveland, and in May, 1956, at the joint engineering committee meetings in Chicago.

Chairman GEORGE J. YANDA has been Superintendent of Customer Services for The Cleveland Electric Illuminating Co. since 1952. He received his electrical engineering education at Ohio State University and Fenn College, joining the Meter Section of the Customers Service Department in 1925. He has served in various capacities within the department since, with the exception of a brief period as coordinator of Union Relations. He is a member of AIEE, IAEI, and AEIC Committee on Meter and Service Methods. Mr. Yanda has been a member of the Meter and Service Committee since 1948 and has served as vice-chairman prior to becoming chairman.

Prime Movers Committee

The Prime Movers Committee will this year for the first time have an Executive Committee of seven members comprised of J. M. DRISCOLL, Chairman, Consolidated Edison Co. of New York, Inc.; V. L. STONE, Vice Chairman, Commonwealth Edison Co.; E. C. DUFFY, Secretary, Long Island Lighting Co.; V. F. ESTCOURT, Chairman of the Turbine and Condenser Subcommittee, Pacific Gas and Electric Co.; R. W. PARKINSON, Chairman of the Boiler Subcommittee, Commonwealth Services, Inc.; F. ARGUE, Stone & Webster Engineering Corp.; and W. LAMOTTE, Public Service Electric and Gas Co. Past Chairmen W. L. CHADWICK, Southern California Edison Co., and G. V. WILLIAMSON, Union Electric Co. of Missouri, will serve as members ex-officio on the Executive Committee.

The aims of the Prime Movers Committee will continue as in the past, namely to increase the mutual knowledge of committee members in regard to the art of power plant design and operating practices and to make available through the EEI headquarters data and reports on current practices.

Vice Chairman V. L. STONE will continue in his capacity as chairman of the Round Table Discussion Group which is considered by the committee to be its most interesting and fruitful activity. In these sessions there is interchange in a very free and informal manner of information as the result of troubles, unusual operating situations, and the starting of new units. It has been truly stated in the past that if one cannot get the answer to a power plant operating or design problem in Prime Movers Round Table, the answer does not exist without especially planned research and tests.

The subcommittees which are the source of the technical reports made available through headquarters are being organized and will have as their chairmen as follows:

Air Pollution—W. C. BEATTIE, Consolidated Edison Co. of New York, Inc.; Atomic Power—J. N. LANDIS, Bechtel Corp.; Boiler Auxiliaries—S. MOYER, Philadelphia Electric Co.; Fuel and Ash Handling—M. D. ENGLE, Pennsylvania Power & Light Co.; Metallurgy and Piping Task Force—E. H. KRIEG, Stone & Webster Engineering Corp.; Oil and Gas Power—J. W. BLAKE, Oklahoma Gas & Electric Co.; Power Station Chemistry—W. L. JACKSON, Public Service Electric & Gas Co.; Power Station Cost and Performance Data—E. C. CAWRSE, The Cleveland Electric Illuminating Co.

Power Station Data—R. P. MOORE, Niagara Mohawk Power Corp.; Power Station Personnel—R. M. VAN DUZER, The Detroit Edison Co.; Power Station Structures and Facilities—C. A. DAUBER, The Cleveland Electric Illuminating Co.; Prime Movers Awards—J. N. LANDIS, Bechtel Corp.; Steering Committee on Feedwater Research—F. W. ARGUE, Stone & Webster Engineering Corp.; Special Instruments and Controls—W. WELCH, JR., Long Island Lighting Co.

The Steering Committee on Feedwater Research continues controlling a research project awarded last year to Battelle Institute on the causes and control of iron oxide formation in high pressure high temperature cycles and the groundwork and procedures to be followed are now firmed.

The Power Station Personnel Committee has just released to EEI headquarters a very comprehensive survey made among the members in regard to personnel practices in central station steam electric plants which have been placed in operation since 1948.

The committee is looking forward to an interesting and fruitful year of activity.

J. M. DRISCOLL
Chairman of the Prime Movers Committee

Chairman J. M. DRISCOLL is the Turbine Plant Engineer of the Consolidated Edison Co. of New York, Inc., prior to which he was a production superintendent in charge of turbine and auxiliary operations. After graduating from Brown University, he joined Brooklyn Edison Co.'s Mechanical Engineering Department. When the company consolidated with Con Edison, he was assistant mechanical engineer. Subsequently he held various positions in procurement, construction, and maintenance functions. He is a member of ASME and for nine years has been active in the EEI Prime Movers Committee, for which he has served as secretary and chairman of the Round Table Discussion Group.

Transmission and Distribution Committee

The function of the Transmission and Distribution Committee under the chairmanship of G. H. FIEDLER, Rochester Gas and Electric Corp., is to guide technical and economic developments and practices and record progress in electric transmission and

distribution; to study the broad engineering and economic problems involved in the construction and operation of the transmission and distribution system including the characteristics of utilization equipment; to record progress and encourage continuation of a high degree of service reliability; to develop and publish specifications for material and equipment required for construction and operation; to study the selection and training of personnel; and to study the interests of electric power systems in relation to those of other wire-using systems.

To conform to the requirements of the Committee on Committees, it has been necessary to revise the organization somewhat but it is anticipated that this will in no way alter the effectiveness of the committee's activities. There will be five subcommittees as follows:

1. The Standards and Specifications Subcommittee is sponsored by M. H. POWELL, Public Service Co. of Colorado. Task forces under this subcommittee study line hardware, timber products, and underground cable connectors. The task force groups meet the day before the regular committee meets and work in conjunction with manufacturers to prepare industry specifications.

The standardization of many other transmission and distribution items carried out by joint industry committees are kept under review through reports by liaison representatives.

2. The General Engineering Subcommittee is under the chairmanship of DAVID BURNS, The Detroit Edison Co. This group is concerned with higher secondary voltages, short service interruptions, communications, and utilization equipment. In addition to these topics, a new task force is being established to study projects for engineering students.

Studies of distribution system loading are being continued and the possibility of voltage correction by the insertion of series capacitors in the neutral connection of distribution transformers will be given attention.

G. H. FIEDLER
Chairman of the Transmission and Distribution Committee

3. The Overhead Subcommittee is under the chairmanship of H. L. LIVINGOOD, New York State Electric and Gas Corp. This group is concerned with aluminum conductor fittings, mutual assistance between utilities, and current problems and practices in the construction, operation, and maintenance of the overhead transmission and distribution system.

4. Activities of the Underground Subcommittee under the chairmanship of H. E. CODY, The Cleveland Electric Illuminating Co., include the *Underground Systems Reference Book* which is being prepared under Editor-in-Chief J. A. PULSFORD. The subcommittee will continue the preparation of network and cable operation reports as usual. A guide for practical loading limits of network protectors is being prepared. Current problems and practices under review include loading of underground cables and equipment, experience with synthetic insulations, cathodic protection, and fault location.

5. The Safety Subcommittee under the chairmanship of W. M. PENNEY, Union Electric Co. of Missouri, is responsible for the consideration and discussion of accident prevention problems and safety activity. This group maintains liaison with the Accident Prevention Committee.

Various research projects sponsored by the committee will be reported to the committee through the subcommittees directly concerned. These projects include Fundamental Research on Aluminum Conductor Fittings, Soil Thermal Resistivity Research, and the ASTM Wood Pile Research Program.

The committee will hold its usual three meetings during the year. The September meeting was held in New Orleans, the winter meeting will be held in Philadelphia in February, and the spring meeting in Chicago in May.

Chairman G. H. FIEDLER, Superintendent of Electric Distribution for the Rochester Gas and Electric Corp., is a graduate of Cornell University and is a registered Professional Engineer of New York State. He joined RG and E in 1921 in the Distribution Engineering Department and held successive positions as distribution engineer, assistant superintendent of Electric Distribution Department, and superintendent of Electric Distribution Department. He has served on the EEI's Transmission and Distribution Committee since 1934 and has been Group Sponsor of several sections. He is also a member of the AIEE.

New Lighting Education Program

A NEW program of educational materials, published by the Better Light Better Sight Bureau, has been announced by H. A. Stroud, Promotion Manager of Monongahela Power Co. and Chairman of the Bureau. The new program, patterned after the three other BLBS Bureau programs for teaching about light and sight, is designed for use in junior high and high school classes in Industrial Arts and Vocational Education.

Materials in the new program, "Working with Light," include: a Lighting Handbook of over 100 pages, profusely illustrated, for use by the teacher and as a shop reference text; 12 four-page Project Leaflets, giving instructions for building lamps and fixtures incorporating good lighting design, complete with working drawings and bill of materials; a Reference Folder for the student electing a lighting project, summarizing lighting principles involved in all the projects; the National Education Association Manual, "Teaching about Light and Sight," and a descriptive catalog folder for ordering purposes.

The new program was prepared by the Commercial and Industrial Lighting Education Committee of BLBS Bureau, of which H. B. Gould, Ohio Edison Co. is Chairman. The subcommittee for the program, chairmanned by B. J. Jensen, Public Service Electric and Gas Co., worked closely with educational authorities to insure authenticity and effectiveness of the materials.

It is expected that electric companies in many localities will help to make this new program available to school shops in their areas.

Effects of Atomic Blast Published in EEI Report

"EFFECTS of an Atomic Blast on Electric Power Facilities"—a detailed report by the men who carried out last spring's "Operation Cue" test—has just been published by the Edison Electric Institute.

Cleared by the Atomic Energy Commission and Federal Civil Defense Administration, the report makes these conclusions:

1. In case of atomic attack, it appears probable that electric service could be restored to homes in a stricken area before its residents could reoccupy them. Industrial plants probably could get their service either before or as soon as the debris had been cleared and they were ready to resume production.

2. Scope of the repair problem would depend directly on the size of the area affected. This is determined largely by the energy yield of the explosion and the meteorological influence on the radioactive cloud.

3. Radioactivity, under the conditions of the test, would cause no particular repair problems. If an area were inhabitable, and thus require electric power, maintenance crews would be able to enter it and make repairs.

EEI Test Participation

The test was made last May at the AEC's atomic test site in Nevada where the Edison Electric Institute, representing the electric power industry, joined with other industries and the Federal government to find out what would happen to a community under nuclear attack.

Retaining the Bechtel Corp. to handle planning and specifications, the EEI constructed two identical electric transmission and distribution systems. Both were placed in the so-called "Survival City" test area where houses, radio towers, industrial machinery, gas utility equipment, and other test items were located. To determine their approximate survival range, one system was built 4,700 feet from "ground zero," the point of explosion, while the other was at 10,500 feet.

Each system included a 69-kv line installed on one steel suspension tower and one steel dead-end tower; substation equipment consisting of a 69-kv oil circuit breaker, step-down transformers, and associated structures; distribution substation equipment consisting of two 4-kv oil circuit breakers and voltage regulators; and about a half-mile of 11-kv and 4-kv distribution lines construction on wood poles, with distribution transformers and secondaries.

It was not feasible to expose a large generating station to this test. Furthermore, if local generating equipment was knocked out, power could be fed quickly into stricken areas from distant points through existing interconnections between electric utilities.

Findings Outlined

Less than three hours after the blast (equivalent to 30 to 35 kilotons of TNT), EEI project members moved into the stricken area. As detailed in their report, this is what they found:

1. The electric system at 10,500 feet was completely intact with no damage except for a dented panel door on a relay and meter cubicle. Nearby dwellings sustained damage to doors, windows, and interiors.

2. Damage to electrical installations at the 4,700-foot line was "moderate"—similar to that caused by a severe windstorm. However, the two homes of conventional construction, located in the same general area were demolished.

Blast Most Damaging

Blast effects rather than heat or radiation appeared to do the most damage. Hardest hit were transmission and distribution circuits but damage was of a type that could be quickly and easily repaired. One suspension-type tower had collapsed. Four of the 15 wooden distribution poles had been broken, several distribution transformers had fallen off their platforms, and secondary wires and service drops were down.

On the other hand, major substation and switching yard facilities—the most difficult and time consuming to repair — sustained only minor damage.

3. Heat damage was minor: some blistered and charred paint surfaces on transformers and regulators; poles and crossarms slightly charred but not structurally weakened; slightly burned, but still effective, insulation on aerial cable and weather-proofed secondaries. All of this was in the 4700 foot area.

4. Radioactive fallout at both locations was low enough to permit repair work to start within a short time after the blast and to continue for an indefinite period. Probable reason: bulk of fallout is limited to specific areas. Most of it follows the winds and does not spread radially from the blast site. The test installations were located outside the heavy fallout zone.

Limitations Noted

The report, however, notes some limitations to what might be drawn from these observations. First, quoting the AEC, it says that "test conditions (size of atomic device, and the intensity and area of its blast) may differ markedly from those which might be expected if nuclear weapons were used against our population in wartime." Second, it points out that "shielding" by trees, terrain, and man-made structures, notably absent at the Nevada desert test site, might subject electrical equipment in an inhabited area to more extensive damage from flying debris and blast phenomena.

Copies of the report are available at 75¢ each from the Edison Electric Institute, 420 Lexington Avenue, New York 17, N. Y.

165 Million VIPs

By Harllee Branch, Jr.
President, Edison Electric Institute, and
President, Georgia Power Company

An address before the 8th Annual EEI Industrial Relations Round Table Conference,
Chicago, Ill., September 19, 1955

IF there is anything certain about the age in which we live, it is that our techniques, our social concepts, and our relations to the nation as a whole are changing at a fantastically rapid pace.

In a world in which few things are certain, we can be sure of one thing—if our industry is to survive as a segment of the private enterprise system, we must be attentive to the needs and desires of the 165 million people who not only comprise our national population but also the customers, the owners, the employees, and the general public we must satisfy. For our industry these are 165 million VIPs.

Having accepted this bench mark in a world of shifting values, we must try to evaluate our position with respect to the society in which we live and, particularly, that part of society which makes up our own organizations. On the one hand, we must determine what their needs and desires are, and, on the other, we must try to anticipate what they will offer us in the way of support as well as challenge.

The starting point in effectively meeting our obligations to our customers, our owners, and the general public is in the proper selection, training, inspiration, and direction of our employees. They are the first of the 165 million VIPs we must consider for, without their skill and support, we cannot hope to fulfill our responsibilities to the others.

The directors of the employee relations of our companies are in a key spot and theirs will become an increasingly important function as our operations grow in magnitude and complexity. It is appropriate, therefore, that I should point out to them the new factors which I visualize as likely to affect the efficiency and usefulness of our organizations.

A Second Industrial Revolution

One of the tremendous forces which has been created within the past few years and one which will profoundly change the working habits and occupations of American citizens is the application of what we call automation. Automation has been defined as the "use of machines to run machines." The word got into the newspaper headlines a few months ago when Walter Reuther gloomily predicted that widespread unemployment would result from the displacement of workers by automatic devices. Fortunately, many economists, more objective in their viewpoints, disagree with his pessimistic prediction.

Peter F. Drucker, distinguished author of many articles on business and economic subjects, wrote in the April issue of *Harper's Magazine* that "automation is the technological revolution of the second half of the twentieth century, just as mass production was of the first half."

Employees' Qualifications, Functions

The most important impact of automation will not be on the over-all level of employment but on the qualifications and functions of employees. At present, automation functions principally in the fields of materials handling, routine judgment, machine setting, and data processing, but it will spread to other functions which today seem far beyond its scope.

The electric utility industry has not been backward in adopting the automatic devices which are suited to its operations. Our generating plants almost run themselves, if properly maintained and carefully watched. We have automatic substations unattended by operators, except for occasional visits to inspect the equipment and read the recording instruments. In many of our companies, the billing processes, from the time the meter is read until the payment is received, are handled by electronic devices. The result of automation in our industry, and in other industries where it has been extensively applied, shows that we still maintain a high level of employment at high wages. But there is little room in these industries for unskilled or untrained labor.

Mass production upgraded the unskilled laborer of yesterday into the semi-skilled machine operator of today. Automation will upgrade the semi-skilled machine operator of today into a highly skilled and educated technician—multiplying his income in the process.

The Human Use of Human Beings

Automation, if American management is alert to its broader potentialities, will lead to the human use of human beings; that is, to the greater use of man's specifically human qualities—his ability to think, to analyze, to decide.

The really serious social problem is not merely to maintain employment but rather it is the need to upgrade whole segments of the population in a very short time. Even in routine jobs, automation will require the ability to think, to exercise imagination, judgment, some mathematical skill, and a superior aptitude for reading and writing. In short, it will require the attributes of an educated man.

It has been pointed out that the highly educated, highly skilled employees who make up our organizations in the future will have an infinitely greater going-concern value than they do at present, and it is urged, therefore, that new ideas about their compensation must be developed. The concept of wages in American industry has been as an operating expense which fluctuates with the volume of production. The new concept may be to treat labor as a capital investment, with wages considered virtually as fixed charges. We are already witnessing important moves and pressures in that direction. Efforts to force the change prematurely—that is, ahead of the development of compensating skills and savings—can do great mischief to our economy. In the utility industry, because of our stable employment situation, we have already progressed in that direction to a very considerable extent.

It may be that our greatest prob-

lem in adjusting to the age in which machines run machines will be in the training of management. According to a writer in the *Harvard Business Review*, "The first question a company must now begin to ask of its candidates for executive responsibility is 'What can you do that a computer can't do?' "

Executive Judgment Decisive

The decisive factor in selecting executives in the future will be more and more the breadth and depth of executive judgment, the superior ability to handle qualitative rather than quantitative factors, and the capacity to inspire and lead others in truly creative endeavors. The growing need for breadth as against specialization has brought about a surprising degree of agreement on the need for more emphasis upon the liberal arts in college training. The study of the humanities, of literature, art, and philosophy, is startlingly more pertinent and practical today than some of the advocates of purely vocational preparation have been willing to concede.

I hope you will understand that I am not discounting the need for technically-trained engineers, accountants, financial men and so on. As a matter of fact, men of the highest technical training will be needed as never before. What I am trying to say is that our technicians will have to possess broader qualifications than mere technical competence.

Unbalanced Education

Let me give you a quotation from Clarence Randall, President of Inland Steel: "The weakness of technical education as a preparation for a business career, when it is not balanced by participation in liberal discipline, is that it leaves on the mind of the student the impression that all problems are quantitative and that a solution will appear as soon as all the facts have been collected and the correct mathematical formula evolved. Would that life were that simple! Unhappily, the mysteries of human behavior from which come our most complex modern problems do not lend themselves to quantitative analysis and there is no mental slide rule which can be distributed as a substitute for straight thinking."

A similar thought was expressed by Arthur A. Houghton, Chairman of the Board of Corning Glass. He said: "The executive does not deal with physical matter, he deals exclusively with ideas and men. He is a skilled and practical humanist."

As more and more of our work is taken over by machines, there is a growing realization that the executives who run our companies and who cannot be replaced by machines must be men of broad vision rather than of narrow specialization. Machines have marvelous abilities to count, to compute, to measure, to exercise routine judgment, and to regulate processes. But machines, ingenious as they are, will never be able to sense the unspoken disappointments of our customers, the unsatisfied aspirations of our employees, or the unfulfilled desires of the general public. They will never be able to erect social, economical, and political standards to which the wise and honest can repair. They will never be able to instill faith, courage, and hope in others by the example and inspiration of their own conduct. For such tasks we will still need—perhaps more than ever before—men of the highest degree of humanity.

Our Industry's Amazing Progress

The electrical industry has greatly improved its techniques and apparatus during its relatively brief existence. Since those who have grown up with the business, as some of you have, frequently seem the least conscious of and the least impressed with the dramatic changes that have taken place, I would like to cite a couple of examples of our tremendous progress:

(a) In 1889 the Philadelphia Electric Co. put its first steam-electric plant, the Edison station, on the line. Its efficiency of 460 kwhr of electricity per ton of coal completely confounded the technical men of that time. The generator had a capacity of 164 kw and operated at 365 degrees steam temperature and 150 psi pressure. Today Philadelphia Electric is building a new 325,000-kw station which is expected to be the most efficient steam-electric generating plant in the world. Its turbo generator will produce 3,450 kwhr per ton of coal. Steam pressure will be 5,000 psi and the temperature of the steam will be 1,200 degrees. Such is the increase in efficiency that the new station will produce more than seven times as many kilowatthours for the same amount of fuel as the one installed in 1889. In size, the new generator will be about 2,000 times as large as its historic predecessor.

(b) Now another example: In the early days of the electric industry many attractive water power sites went undeveloped because there was no way of transmitting power over the considerable distances necessary to market it. In 1887 the City of Buffalo offered a prize of $100,000 for the best scheme for transmitting power from Niagara Falls to Buffalo, only 22 miles away. Despite this tempting prize no practical means was devised, though numerous plans were submitted, until 1896, nine years later, when the Niagara Power Company constructed an alternating current transmission line operating at 11,000 v. Today the entire transmission system supplying power from Ohio Valley Electric Company to the Atomic Energy Commission, approximately 400 miles of double-circuit lines, is operating at 330,000 v. There are 260 miles of 330,000-v lines in operation on the American Gas and Electric System and 230 additional miles are under construction by that company. The development of transmission lines which can carry huge blocks of energy at such high voltages depended upon the perfection of associated equipment such as insulators, lightning arrestors, circuit breakers, relays, communications equipment, and so on. It is now generally predicted that the industry will be transmitting power at 500,000 v before many years have passed.

Research for Continuing Progress

These great advances, and others, in the art of generation, transmission, and distribution, were the result of continuing research work by our engineering and scientific schools, by the manufacturers of electrical equipment, and by the electrical industry. As we stand now at the beginning of the atomic age, it is obvious that our research activities will have to be multiplied many times over.

A whole new technology will have to be developed in the years ahead. As yet, we have only scratched the surface of atomic energy utilization. Much of the equipment and many of the procedures necessary for its full peace-time employment are still to be dreamed up and designed. Today's experimental operations — even the

components which appear to us so wonderful—will some day seem to us as cumbersome and inefficient as the steam turbine of a few decades ago.

To keep pace with the marvelous age in which we live and to bring its blessings to our customers, the electric industry should encourage and support research programs, pure and applied, in whatever field seems likely to increase the efficiency and value of our service and reduce its cost.

A leading manufacturer of electrical apparatus boasts that "Progress is our most important product." That is a fine slogan. Our industry, to achieve its true destiny, must also continue to underscore progress as its major objective. To that end, we must initiate and support research programs — even research programs which, at the moment, seem remote from and unrelated to today's operating problems.

Industrial relations executives who are concerned primarily with manpower and not with apparatus or operating techniques, should nevertheless be interested in seeing that their companies do not overlook the importance of research. They should urge them to support the research programs of our colleges and of our engineering and scientific schools because they provide a valuable training ground for our engineers and technicians and, most importantly, for the teachers and instructors who prepare them to serve in our industry. Even when these research programs result in no immediate and demonstrable gain to our industry, they still serve to keep us alert and in a dynamic, rather than a static, frame of mind. And we must be dynamic to survive in a rapidly-changing world!

Attracting Needed Talent

On the basis of industry forecasts, it appears that our industry's installed generating capacity in 1965 will be about 215,000,000 kw, or double today's figure. Energy sales will be about 850 billion kwhr, or more than twice the 1954 figure.

By 1975 the installed capacity will probably be 400,000,000 kw, again almost doubling the 1965 figure.

I am sure we will find answers for the problems connected with this almost fantastic growth, but we need to remind ourselves that the men who will solve 1975's problems, with four times today's capacity and kilowatt-hour generation, will not be hired in 1975. We employed them last year, or this year, or will employ them next year. For 1975, the die is already cast insofar as our manpower potential is concerned.

What we need to be seriously concerned about now, before it is too late, is the availability of enough properly-trained engineers to carry on our business in the years beyond 1975. It is an alarming fact that the number of first-class engineering students interested in going into the utility business is declining almost as fast as the industry is expanding. If this development continues, our progress may come to a halt.

The AIEE made a survey of 102 schools representing 75 per cent of all accredited engineering colleges. They found that about two-thirds of the undergraduates in electrical engineering were training for electronics and only one-third for all the other branches of electrical engineering combined. Out of a class of 90 graduates in electrical engineering in one year at a Midwestern university, only one man went to work for a power company.

Reasons for Shortage

The first reason, of course, why companies are suffering from a shortage of engineers is because there just aren't enough engineering graduates to meet all of the present and heretofore unpredicted needs of American industry. This problem will grow more acute, as I indicated earlier, when the effects of automation are felt more widely, bringing about an upgrading in the requirements for employees to operate and maintain the new and complicated machines now being made ready for general business and industrial use.

We are also finding it difficult to meet our needs for engineers because the electric utility industry has not made itself look attractive enough as a place of employment to young men of energy and imagination. Our starting salaries are not as high as those offered by the industries which compete with us for engineering talent, and our rate of advancement is not as rapid. We have let the impression be created that we have become too stabilized. In my personal opinion, this is a more serious obstacle to our recruiting efforts than the level of our starting salaries. Young men of ambition and ability want opportunities for recognition and to perform constructive tasks.

The fact that the utility industry does not appear to be glamorous to these young men is largely our own fault. We have not done a good selling job. It seems to me that a business which will be in the forefront of the atomic age and one whose services are expanding so greatly that it doubles in size every ten years ought not to be so lacking in glamour that the young engineering graduates should pass us by.

Greater Educational Interests

As a means of presenting our industry in a favorable light, as a place where young men can find opportunity and satisfaction, I suggest that we take more interest in the colleges and universities, both those engaged in technical and scientific training and those teaching the liberal arts. These institutions and their students have a real need for our counsel as well as our financial assistance.

A couple of weeks ago, I read a fine editorial in the *Chicago American*, entitled "Brain Power." It dealt with the National Merit Scholarship Corp., recently set up, with the financial assistance of several of the larger corporate foundations, to serve as "an educational clearing house" for industrial and business firms desiring to financially assist our institutions of higher education and the promising students who desire to attend them. The editorial said:

> "Since the nation's most valuable possession is the minds of its people, it is simply good sense to make the best possible use of the mind. The best use is not being made of them now. About half the students graduating from high school with grades in the top quarter are not going to college.
>
> "What the failure to give further training to those able young minds will cost the nation cannot be estimated. There must be a good many among them who, given the necessary technical education, would make discoveries and develop ideas of real service to their country and to all humanity. * * * This (program to assist the colleges and their deserving students) is an appealingly American movement.

Through it, free enterprise offers deserving young Americans the chance to cultivate their capabilities. At the same time, it contributes to the upbuilding of the nation's brain power."

The private schools which operate on fixed incomes from endowments are having difficulty paying their expenses in these days of record-breaking enrollment, reduced earnings because of high taxes, and other rising costs. In recent years, the income tax laws also have prevented the accumulation of the large industrial fortunes from which college endowment funds formerly were derived.

State-supported institutions have fared little, if any, better at the hands of reluctant legislators faced with ever-increasing demands for public services of every description. It begins to appear that, if state colleges are to do an adequate educational job, and if the private colleges are going to survive, our corporations must increasingly contribute to the support of these institutions. This seems to be one way of assuring that more and more of our deserving young men and women will get the kind of educational training necessary to assure our nation of an adequate supply of industrial leaders and highly-skilled workers.

Our support for the colleges, universities, engineering and scientific schools should be based on a higher motivation, to be sure, than merely attracting their favorable attention and that of their graduates to our companies. But, in an industry which must account for its every contribution to regulators, as well as stockholders, this is a recruiting asset not to be overlooked.

Having said so much about utility support for research and college programs, I must confess that my own company's example in these fields is not yet what we would like it to be, despite some sizable contributions to such endeavors. We hope to make it better.

Train to Meet Threat

Our industry has done an exceptional job in convincing its customers and the general public that electricity is essential to modern living. We have done such a good job, in fact, that the demagogues and the advocates of Socialism would like now to take over our service as an extension of governmental activity. We must operate our companies and that means we must elect and train our personnel with this threat in mind. It is no longer sufficient that our employees—particularly those in key managerial positions—be skilled only in their immediate functions. They must also be men of vision and articulateness—with enough intelligence to cut through the fuzzy thinking that characterizes so much of today's political diet, and with enough courage and energy to defend the institution and the system which have provided them with jobs.

Wherever I go this year, I am trying to alert our industry to the pressures now being applied for the socialization of the electric industry. This is no false alarm. It is a serious hazard and it will increase as the political maneuvering of 1956 gets underway. To meet this threat our personnel must be clear-headed, cohesive, and courageous—and I especially underscore *courageous* — as never before!

In concluding, I would like to point out that the electric industry has one of the highest, if not the highest, investments per dollar of revenue and per employee of any industry in America. The investment per employee was $55,500 in 1950. By 1953 the figure had risen to nearly $76,000, or an increase of nearly 50 per cent in three years. The figure has further increased in the subsequent months.

The question which I tried to pose earlier, and which I now repeat, is this: Are our employees as good as our machines? Are they increasing in value the way our machines are increasing in cost and efficiency? Is the employee we are hiring today worth 50 per cent more than the one we hired in 1950?

The Real Problem

It seems to me the real problem posed by automation is finding and training our employees so that they will be as good as the machines they operate. This is a problem which challenges the greatest ingenuity we possess. I commend it to the earnest attention of our industrial relations men, since they are the ones in our industry who are charged with the primary responsibility of keeping the human resources of our companies geared to the demands of a dynamic age.

World Power Conference Chooses Canada For 1958 Meeting

THE International Executive Council of the World Power Conference has accepted the invitation of the Canadian National Committee to hold a Sectional Meeting in Canada in September, 1958. This will be the first Canadian meeting of this body since it was founded in 1924. However, Canada was included and Canadian interests were hosts in tours to Canadian projects, arranged in connection with a Plenary Meeting held in Washington, D. C., in 1936, the only occasion on which the Conference has met on the North American continent.

The World Power Conference comprises National Committees from some 40 countries and its meetings are attended by representatives from these and other countries. It was founded to form a link between different branches of power and fuel technology, between the experts of the different countries throughout the world, and between engineers and scientists on the one hand, and administrators and economists on the other hand.

Business meetings and discussion of papers concerning energy resources of the world and its component countries, seasoned with social activities, will be held in Montreal during the week of September 7-14, 1958.

The meeting is being coordinated with the Sixth Congress of the International Commission on Large Dams, which is being held in the Northeastern United States, and dates are being arranged to permit attendance at both meetings. Arrangements are being made for jointly organized tours of projects of engineering and scientific interest in both countries. It is anticipated that some 1500 delegates comprising leaders of industry and the engineering and scientific professions throughout the world will be present.

Dixon-Yates in Retrospect

By Paul Hallingby, Jr.
Vice President, Middle South Utilities, Inc.

An address before the Downtown Lions Club, St. Louis, Mo., September 28, 1955

IN the last year and three-quarters, the officers of Middle South Utilities, as well as our counterparts of The Southern Co., have devoted a great deal of their time to the project which became so widely known as Dixon-Yates. Naturally, when on July 11th President Eisenhower ordered the Atomic Energy Commission to cancel the Dixon-Yates contract, those of us who had worked so long and hard on the project were disappointed initially.

In retrospect, however, we believe that out of our efforts have come a number of distinct gains in the interests of free enterprise, gains about which I would like to tell you. Also, out of our Dixon-Yates experiences has come a better understanding on our part of the strength and the tactics of forces in this country which have been well described by Harllee Branch, Jr., President of the Edison Electric Institute, as "a privileged class for America." He was referring, of course, to the tax-supported and government-subsidized power groups which have taken unto themselves the beguiling title of "public power." Later on I will comment on this, too. First, I think it might be helpful to review briefly the background which led to the so-called Dixon-Yates contract.

TVA Area Enlarged

Since passage of the TVA Act of 1933, the Tennessee Valley Authority has come to provide the electric power supply of not just the Tennessee River Basin, but a much larger area, covering virtually all of Tennessee and parts of six other states. TVA supporters claim the Federal government has assumed a moral obligation to provide all of the electric power requirements of the people in the area.

In carrying out these so-called obligations, the TVA has, as I am sure you are aware, gotten far, far away from its original purpose as a river development project which would also market any surplus electric power produced incidentally at its dams. After the Tennessee River was virtually fully developed from the standpoint of hydro-electric power, TVA sought and obtained funds to build steam plants for generating power to "firm up" the hydro-electric power which cannot always be relied upon around the clock because of limited flow of water in the rivers. Also, for purposes relating to national defense, TVA has sought and been granted substantial funds for the building of more steam plants. To be more specific, TVA has received directly or indirectly from the U. S. Treasury approximately $1,600 million with which to build the world's largest power system—hydro and steam. On its appropriations, TVA has not paid a single penny of the interest which that money is costing the taxpayers.

Power Shortage Predicted

In 1952 and the years following, TVA made statements to the effect that unless more funds were appropriated for the building of more steam plants, a power shortage would develop in its marketing area by 1957. And little wonder that this should be so, for exemption from interest payments, along with other subsidies, have enabled TVA customers to purchase power at substantially less than its true cost to the government. Needless to say, use of electricity by this privileged group is far greater than—in fact, nearly double—the national average and the American taxpayers pay a large part of the bill.

Specifically, to get along with our story, TVA sought funds for building a large steam plant at Fulton, Tenn., a request that was denied by Congress in 1953 and again in 1954. This proposed plant seemed to have some very special significance to the advocates of "public power." For one thing, it was to provide for ordinary load growth in the area supplied by TVA and was not to firm up hydro-electric power and not for national defense purposes. For another, the plant would have been located some 80 miles west of the Tennessee River Basin. Finally, if the Fulton plant were built, TVA at last would have a steam-electric plant on the banks of the Mississippi River. If Congressional approval could be obtained for such a plant, then there would seemingly be a precedent for building similar plants elsewhere in the country.

It will be recalled that the Eisenhower Administration was known to favor a policy of employing local or private capital whenever citizens or industry were willing and able to do a given job; only if such capital could *not* be obtained for a necessary job, would an appropriation of government funds be recommended. Of necessity, along with this policy came recognition that cost comparisons of government versus private projects do *not* reflect the immunity of government agencies from certain taxation and cost of money. Needless to say, thinking of this type had not come forth from a national administration in some 20 years.

In carrying out its policy, the Administration worked out a plan, which, in the words of President Eisenhower, would ". . . relieve TVA of part of its obligation to furnish electric power to AEC in order that TVA, without additional steam plants built at taxpayers' expense, may have an adequate supply of electric power for its customers through 1957." The Atomic Energy Commission was then taking about one-third of the TVA power output for certain of its gaseous diffusion plants and was destined to take an even larger percentage. Accordingly, the Administration asked the AEC to explore the possibility of purchasing another large block of power from private sources.

Firm Offer Made

Out of some preliminary discussions with the AEC and the Bureau of the Budget, in which J. Wesley McAfee, President of Union Electric Co. of Missouri, was most helpful, came the eventual proposal of Middle South and Southern Co. In April, 1954, these two companies made a firm offer to build a 650,000-kw, coal-fired, steam-electric station near West

Memphis, Ark. The plant would supply 600,000 kw of firm power under a long term—but cancellable—contract with the AEC. The power would be delivered to TVA in the Memphis area. TVA would then deliver a like amount of power to AEC installations, where needed, from existing facilities. The theory of supplying power by replacement is used regularly in our business. It was applied here so that the new facilities could be built in the area where TVA stated that the need for more power exists, thus making it possible for the government to make the most advantageous power arrangement from the standpoint of the taxpayers of the nation.

Similar to Other Contracts

The power contract that we negotiated with the AEC is basically similar to contracts AEC negotiated previously for purchase of large blocks of power from investor-owned facilities. I refer of course to Electric Energy, Inc., a company formed for this purpose by five investor-owned utility companies, in which Union Electric Co. has a 40 per cent interest and Middle South Utilities has a 10 per cent interest, and to Ohio Valley Electric Corp. Electric Energy serves a part of the AEC load at Paducah, Ky., while the Ohio Valley project, sponsored by 15 investor-owned utilities, will serve the entire AEC load at Portsmouth, Ohio.

The main differences between our contract and the previous two, which were negotiated during the preceding administration, are that, in our case, the contract was for a smaller amount of electric power and the major risks were assumed by the sponsoring companies. You will note that I said these two prior contracts were *negotiated*—so were similar AEC contracts with TVA. Despite all this precedent, the fact that our contract was *also negotiated* brought long and loud criticism from the opposition.

"Best" Contract Negotiated

The contract between the AEC and Mississippi Valley Generating Co., the company we formed for the purpose of carrying out the contract, was signed last November, at which time its terms were made public. In the open hearings of the Joint Committee on Atomic Energy at that time, the general manager of the AEC testified that the contract with the Mississippi Valley Generating Co. was the best power contract from the government's standpoint that the AEC ever negotiated. Testimony was presented and documented that "costs to the AEC for the power would be at rates lower, on a comparable basis, than rates under existing contracts with TVA or other private utilities."

The terms of the contract or other aspects of the project were carefully reviewed or considered by no less than seven different government agencies, each acting in accordance with its respective area of responsibility and jurisdiction. In every instance approving action resulted. Perhaps most important of all is that in 1954, when the Senate and the House approved the so-called Ferguson Amendment to the Atomic Energy Act of 1954 and the Act itself, they approved the principles underlying the specific Dixon-Yates contract.

Long, Loud Opposition

Despite the approving actions from the various government agencies, and despite the precedent of two comparable contracts negotiated by the previous Administration, there was long and loud opposition to the project from its inception. At first, its opponents made every effort to find something wrong with the contract itself. As these efforts, one by one, ended in blind alleys, the real motivation of the Dixon-Yates opponents became apparent. The controversy seemed to settle upon the fundamental question of whether private capital or government funds should be used in expanding our nation's steam-electric power facilities. The most persistent opponents of Dixon-Yates were out-and-out advocates of government ownership and government operation of electric power facilities.

As this opposition group proved unable to substantiate its criticism of the contract and its terms, it turned its efforts toward looking for something wrong or sinister in connection with the evolution of the contract. These efforts, which apparently are continuing, likewise have proved fruitless.

Negotiation of the contract proved a long and arduous process. After the contract was signed last November 11th, application was made promptly to the Securities and Exchange Commission for permission to proceed with the equity financing. Long public hearings followed, and in February of this year the Commission authorized Middle South and Southern to purchase all of the common stock of Mississippi Valley Generating Co. The two companies then invested $1.1 million in Mississippi Valley, and agreed to purchase an additional $4.4 million of common stock later on. Commitments were firmed up for the purchase of the major equipment, Ebasco Services Inc. was selected and approved as engineers and construction managers of the project, and work at the site was begun around June 1st. Meanwhile, we had completed our debt financing arrangements and obtained approval of them from the Arkansas Public Service Commission.

Contract Reviewed

In June of this year the SEC completed its hearings concerning our debt financing arrangements. It was shortly after this that President Eisenhower announced TVA had advised the Budget Bureau that the City of Memphis had decided to build its own power plant and thus would not renew its power contract with TVA, which expires in June, 1958. In its letter to the Budget Bureau, TVA stated that ". . . no arrangements between AEC and Mississippi Valley Generating Co. should any longer be predicated on the use of the MVG plant as a source of supply to TVA." The President then ordered the Budget Bureau, AEC and TVA to review the question of continuing the Dixon-Yates power contract.

Contract Cancelled

On July 11th, the late Mayor Tobey and the head of the City's Gas, Light and Water Division visited with the President and other Administration officials and gave them assurances that the City would go ahead with the building of a power plant and take care of its own power needs. Following this action the President made his announcement with respect to cancellation of the Dixon-Yates contract.

It was interesting to us to recollect that the idea of the City of Memphis building its own plant was talked about, off and on, for nearly a year

and a half before the City finally took some real interest in this solution to its power problem. The reason for the sudden interest on the part of the Mayor in building a plant was made clear by none other than the late Mayor Tobey himself during a television broadcast in Memphis on July 24th of this year. On that program he was asked when the decision was made for the City to build the power plant. His answer was that the decision was ". . . made in Washington when we were definitely told by our Senators and others that it was impossible to get sufficient votes to get the Dixon-Yates contract cancelled." I think that simple statement illustrates the extremes to which the public power enthusiasts will go in preventing business - managed, tax - paying, investor-owned power companies from doing a job in the traditional American way.

Contract Status Today

Some of you may be wondering what the status of the Dixon-Yates contract is today. Upon receipt of verbal notification from the AEC on July 11th of the intention to cancel the contract, work at the plant site was stopped and the construction contracts were subsequently terminated. Likewise, fabrication of equipment by the various manufacturers was brought to a halt on a basis that would permit maximum salvage value for the government.

We have held a number of informal conferences with the AEC staff with a view toward working out termination of the contract. However, owing to some complex legal problems, written notice of termination of the contract has not been received. Once this matter is resolved, we are hopeful that Mississippi Valley Generating Co. will be successful in obtaining a satisfactory settlement consistent with the terms of the power contract.

All in all, our experiences with the Dixon-Yates project have been most interesting, very often frustrating, and at all times highly educational to us. We sincerely believe that the Dixon-Yates project brought about some tangible gains from the standpoint of the investor-owned electric power industry in particular and the American business system in general. The most prominent of these is the feeling expressed by many that the government-ownership proponents actually lost the Dixon-Yates struggle. Their number one objective, namely, to have Congress appropriate your and my tax dollars to build a subsidized TVA steam-electric plant at Fulton for the sole purpose of expanding its public utility business, was never reached. Since no appropriation was made for Fulton, the various precedents which Fulton would have established, and which seemed so dear to the hearts of the public power proponents, went by the boards.

A Precedent Established

Another gain is that the chances of getting a reasonable Congress to appropriate funds for steam plants for ordinary load growth in the TVA area would appear to be more difficult than ever if Memphis carries out its plans. Other cities supplied by TVA might well be expected to tear a page out of the Memphis book, when and if their power needs outstrip TVA's ability to supply them. Thus, those who fought hardest to kill the Dixon-Yates contract may have unwittingly helped establish a precedent of which Congress might take more than passing note in considering future appropriations for TVA.

Educational Aspect

Finally, and perhaps most important of all, there is the educational aspect of the Dixon-Yates controversy. We are convinced that a great many people — including some Congressmen and newspapermen, among countless others—learned a great deal about TVA through the attention which Dixon-Yates caused to be focused on the agency. I refer to the awakening of so many people for the first time to the fact that TVA pays no interest on its appropriations; that it pays no Federal taxes and only nominal state and local tax equivalents; that TVA's steam capacity will soon be approximately twice its hydro capacity; and that TVA is no longer a social experiment, but a huge, government-owned, electric power system whose supporters claim the moral obligation to supply the power needs of an area in seven states.

In short, the oft-quoted remark that the Tennessee River and its tributaries run through seven states and drain 41 states now is meaningful to many more citizens because of the light which Dixon-Yates shed. Tangible evidence of an awareness along these lines may be found in the introduction in Congress of legislation affecting TVA's activities, such as was recently proposed by Senator McClellan.

The widely read New York *Daily News* summed up the matter in an editorial captioned "Dixon-Yates — Who Wins?" Said the *Daily News:*

"We can't grasp the reasoning of Democrats who claim a great victory for their party in the President's cancellation of the Dixon-Yates power plant contract.

"The Administration's aim, in negotiating this deal for a plant to be built by a private firm, was to halt the socialistic Tennessee Valley Authority's persistent muscling into the power business. The over-all object was to keep TVA from taking any more money from taxpayers all over the country so that people in the TVA area can have cheap current.

"That object has now been won by the City of Memphis' decision to build the plant. Memphis will finance and support the project; taxes gouged from people in New York, Illinois, California, etc., will not.

"Thus, the Administration scores on its long-time proposition that local communities or companies should handle such projects. This is a Democratic victory?"

Tax Immunity

Along with the gains we ascribe to Dixon-Yates are some other developments which should be taken into account. For one thing, while municipally-financed plants are more nearly self - supporting than Federally - financed plants, since the former must pay interest on their capital funds, they are less so than privately-financed plants because of their tax immunities. Municipal systems pay no Federal income taxes and the owners of their bonds pay no Federal income tax on the bond interest.

I am sure it is as clear to you as it is to me that tax immunity of this type for the benefit of a special group merely increases the burden on all other taxpayers throughout the 48 states. In other words, while the

Memphis plan, if effected, is a step in the right direction, it is no more than a step.

For another thing, there is no way of knowing for sure that by June, 1958—the date its TVA contract ends—Memphis will be able to accept sole responsibility for its power supply by building its own power plant, particularly since the passing of Mayor Tobey. If for any reason it does not, the power problem down there would be right back where it was in 1953 and 1954, only much more acute.

Seldom have we seen such a clear picture of what can happen when advocates of public power decide to go all out to further their aims. When the City officials were told "by our Senators and others" that the only way to kill the Dixon-Yates contract was to promise that Memphis would build its own plant, and they took that step, they apparently did so without benefit of engineering studies, cost estimates, or knowledge as to whether a suitable plant site was available—at least there was no public knowledge of any such information. So what happened—the TVA was given assurances that Memphis would not look to a renewal of its power contract come 1958, and Dixon-Yates *was* stopped.

No Public Evidence

But nearly three months have gone by and there is no public evidence even now that anyone knows for sure just *where* Memphis will build or *what the size* of the plant will be—surely these are key elements in finding out how much the plant will cost and what the power to be produced will cost. What a tragic way to gamble with the power supply of—and thereby the very life blood and future of—a whole community.

Thus, a by-product of Dixon-Yates must surely be a clearer realization on the part of those who believe in the American incentive system that government power advocates in the United States are well organized and will go to extremes to further their aims. We cannot underestimate their strength and tenacity.

From our Dixon-Yates experiences we were shocked to learn first-hand of the unbecoming tactics sometimes employed by Congressional committees or subcommittees, in this instance in dealing with businessmen attempting to do a job in good faith for the Administration.

Editorial Comment

Following the examination of Edgar H. Dixon by the Senate Antitrust and Monopoly Subcommittee in midsummer, the Washington *Post* published an editorial entitled "Senator on the Loose" criticizing Senator Langer for his violent outburst against Mr. Dixon and criticizing other Subcommittee members for failing to ". . . rebuke the Senator for browbeating a witness."

The *Christian Science Monitor* followed with an editorial pointing out the need from Congress of a self-disciplining code. Said the *Monitor:*

> "The need for it has not evaporated. Just before the session ended one Senate hearing furnished an exhibition which should arouse new demands for Congress to control its committees. Twice a senator is reported to have accused a witness of lying. He was hiding behind Congressional immunity from libel suits and abusing his official position."

All things considered, we are glad that we made the Dixon-Yates proposal. We entered into the contract as a consequence of a directive given to the AEC by the President of the United States. As American citizens we responded to that directive. Our actions in this matter have been on a patriotic and ethical level. We are leaving the situation on that same level in consequence of another directive of the President of the United States.

We so thoroughly dislike government in business—especially when it competes under a different set of rules which are heavily in its favor—and we support so strongly the principles of free enterprise that were behind the Dixon-Yates contract, that I have no doubt our company would do it all over again if called upon. Naturally, we would rather be building the West Memphis power plant today than attempting to obtain a termination settlement—one which we hope will make MVG substantially whole from a standpoint of dollars, but will never compensate the many individuals concerned for the time and energy they devoted to this project. As the *Wall Street Journal* stated it so aptly in a Dixon-Yates editorial entitled "Perils and Politics:"

> "In addition to financial jeopardy, Mr. Dixon and Mr. Yates can also contemplate the many months of wasted time and effort, on the part of many people, which went into the planning of the plant."
>
> * * *
>
> "But, the lesson seems to be, woe betide the businessmen who, however inadvertently, get caught up in the web of partisan politics. They embrace perils they know not of."

Struggle's Accomplishments

And so, looking at Dixon-Yates in retrospect, we firmly believe that out of the struggle came some important accomplishments. I hope that I have succeeded in clarifying some of these to you.

The opponents of Dixon-Yates are the same forces that champion that specially-privileged minority of Americans who receive subsidized government power at the expense of all other Americans. Surely it is understandable that there is more at stake in restoring equality of opportunity in the power field than just the well-being of America's power companies, one of which I am proud to represent. The fundamental principle here involved is the equality of opportunity for *all* Americans. Without that, the entire free enterprise system of our country is threatened.

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People and Profits

By N. Bernard Gussett

President, Iowa Power and Light Company

An address before the 8th Annual Round Table Conference, EEI Industrial Relations Committee, Chicago, Ill., September 20, 1955

THE theme of the 8th Annual E. E. I. Industrial Relations Conference "Making Personnel Administration Pay Off," is heartening. It infers an acceptance, at least by the program committee, of the thought that personnel administration can be made to contribute, in tangible and recognizable ways, to company profits. It seems to promise procedures which will provide operating report justification for an activity which has been looked upon for too long by too many as a non-profit function, as a nice-to-have in good times and as a first-to-get-the-ax in times of depression. It indicates that the conference may develop some ideas which will permit the personnel directors to justify the existence of their functions as profit-making musts.

That such justifications have not been made in the past is largely responsible for the undeniable fact that many company managers, when faced with the necessity for radical reductions of expenditures, have trimmed the Personnel Department back to the status of little more than an employment agency. Had they been caused to understand that the administration of personnel in their organizations was actually making money for them and developing real profits, the cutbacks probably would have been avoided.

Further Delay Undesirable

For the good of all, workers, customers, and owners, it is most necessary that this justification, this proof by personnel directors to managers that personnel administration can be made to pay, not be delayed. The fact that it has been delayed probably should not be laid on any particular doorstep.

Many personnel directors are unable to sell managers upon the profit making potentials of proper personnel administration because they, themselves, do not know the answer. This in itself is not necessarily evidence of inability to analyze or of failure to understand the requirements of the job. Quite often it is entirely due to their standing too close to the forest to see the trees and in many, many cases top management has put them in that position through a lack of understanding. Conferences such as this can be of assistance to both company managers and personnel directors by paving the way to a better mutual understanding.

This undesirable situation, this lack of understanding, has come about through a number of influences over which neither managers nor personnel directors have had much control.

The Practical Ladder

To begin with, most top managers have come from bottom to top via the ladder of the practical. This is particularly true in our business due to its highly technical nature. In many companies nine out of ten department heads are engineers. These men have been raised in an atmosphere where two times two means four or at least the slide rule equivalent thereof. They have found that the accounting, the sales, the rate, the operating, the financial, yes, even the legal procedures, fit in with the pattern of their training. The same reasoning applies where their basic training has been in the law, in accounting, in the techniques of business. These men like to gather associates around them who can get understandable and concrete results without the necessity of a great deal of executive direction and advice.

Along the same line of consideration, it must be appreciated that many personnel directors have come up the ladder of the practical. They were picked by managers as practical, results-getting men when it became apparent that direction of personnel was required. Generally younger than the principal executives, they quite often had been confined to a particular technical operation until the development of this promotional opportunity. Except in rare cases they had not been especially trained as personnel administrators.

Assuming their new duties they seldom, if ever, were given a comprehensive job description but more often were charged to get in there and straighten out something that did not seem to be measuring up to a standard that practically no one knew how to set. As a result, they have studied and conferred and worked so hard and so long upon the "musts of the moment"—such as organization charts and function charts and job descriptions and job analyses and the patterns of progression and the mechanics of employment and negotiations and arbitrations and the endless tasks and challenges of their developing jobs—that they have gotten so close to their basic responsibilities as to have compounded the compartmentation of their earlier days to the extent that they have failed to see the business as a whole and their great importance in it.

The "Tolerated" Director

Many managers have done little to move their personnel directors back from the forest of detail so they could see the trees of opportunity. This is quite understandable. It has been said, and truly so, that a man's opportunity depends to a great extent upon his arranging for the knock on the door. The manager assigned the personnel task; certainly it was not the function of the manager to construct the job in detail. As time went on it may even have been that he looked forward with little pleasure to conferences with his director of personnel because either they resulted in the submission of unpleasant problems for which no immediate solution was apparent or in recommendations for

expenditures which were not supported by concrete promises of return. A phase of this imperfect relation was summed up by one very old manager who said that he did not wish to do more than tolerate his director of personnel, first, because he, the manager, did not understand the problems and, second, because to do more might cause the director to lean too far to the side of management and too far from the side of the worker.

Demarcation Disappearing

Such a poor understanding, such a narrow philosophy has no place in our present day thinking. In these days when the size of our companies is necessarily growing to the point where the owner-manager is the exception and the professional-manager the rule, the idea of a sharp line of demarcation between management and workers or between management and the administration of personnel is fast falling into discard. All of us are workers, working for the good of our fellows, high and low, and for our customers and for the savers who make our business possible.

It is submitted that the time has come for the directors of personnel to resist further compartmentalization—compartmentalization to which many of them have contributed—and by so resisting not only to perform a better job but to cause the managers to appreciate that job and to recognize them as potential top executives of the future.

Ways of Accomplishment

This desirable result can be accomplished in a variety of ways. However, not the least important of these is the recognization and admittance that profits are required and that people are necessary to profits.

Too often it is said that ours is a business of machinery and not of men, and the differences between our operations and others which use more human hours per dollar of investment, are stressed. This is a short view and an unwise one. Rather we should admit that without people our enormous items of property would be but resultless masses of material. The enviable service standards which have come to be looked upon by our customers as expectable are the results of a blending of machinery and materials and people toward the end of adequate long time operation based on profits.

There is nothing dishonest about profits. They are the basis of our American system which, despite the screams of its opponents, continues to be the best yet developed in this world. In our business these profits are limited by a variety of influences, not the least of which is regulation by government.

It is not my purpose to devote much more time to the desirability of profits but I can not fail to urge that at an early date you confer with your m a n a g e r and refresh your minds as to the sources from which your organization obtains the funds so necessary to its existence and expansion. You can not fail to be impressed by the thousands of its stockholders or by the small size of their average holdings and by the hundreds of thousands of savers who, as owners of insurance policies, shares in investment or trust funds, bank deposits, etc., have expressed a confidence in the profit making future of your company.

The Information Paradox

You may come to realize that the admitted failure of some managers to cause you to broaden your perspective is an example of failure to cause information to flow from top to bottom. This is, of course, the case, but here we have the paradox of the pot calling the kettle black. It is without doubt a function of personnel administration to suggest to management a procedure by which this flow may be constant and fault free. However, it must be admitted that there still remain examples where this function as yet remains inoperable. It is not my purpose to say more on this single phase of a many sided operation but rather to point it out as a single device which, developed, should be enthusiastically accepted by management to the great good of the suggestor.

The manager of the modern investor-owned electric utility is becoming more profit conscious, or let us say more economy conscious, every day. This is quite understandable. His business is growing. He is becoming more professional in the performance of his duties. He devotes less and less of his time to technical problems and more and more to over-all business operations. It is obvious to him that no longer can he handle all of the details or even a great part of them. He must staff and staff well. He must delegate and delegate well, if he is to survive.

Appreciating Competition

He appreciates more and more each day that he is in a highly competitive business and is brought to this realization by a number of influences. First, he knows that an adequate return is not guaranteed by regulatory authority but merely permitted if his company can earn it. Second, he appreciates that he must ever keep himself in the best possible competitive situation, that is with his costs held down, if his company is to be flexible enough to meet the customer-service challenges of tomorrow. Third, he understands that the solution to all problems does not rest in increased rates and that the point of diminishing returns may easily be reached. Fourth, he sees about him a highly competitive market for the new money which is required to continue the unavoidable expansion of the business. Fifth, he observes his stockholders and understands fully that their selection and retention of the securities of his company are based largely upon earnings and dividends and very little upon sentiment. He notes the inflationary trend. He recognizes that in the end he is certainly in a competitive market against installment payments on houses and cars and life insurance and in fact the very devices that consume his product, that he is in a competitive market with the cost of food and schooling and medical care and clothes, the increased cost of living and the deflated purchasing power of the dollar.

Not least, he knows that his company is in competition, direct or by comparison, with publicly owned utilities which pay little or no taxes when about 22¢ from each of his revenue dollars goes to taxes, certainly some to support the compe-

tition. He reflects with understandable pride upon the undeniable fact that to date the investor-owned utilities have paid that tax and yet have successfully competed. No one knows better than he that such success has been based in large degree upon checks and counterchecks on expenses, by careful construction and functional budgeting, by the ever present limitation on expenses developed by the need of profits.

Profit Consciousness

The modern manager knows that to achieve a still better level of economical operation he must get more help not only from the financial vice president and the manager of operations but from every employee, including the director of personnel. Inevitably, he is going to turn to you for help. In order that at that time you can be ready it is submitted that if you are to give usable and practical and worthwhile suggestions you should become profit conscious as soon as possible. How? It seems that you might accomplish this in two steps.

First, broaden yourself and your understanding by a fearless attack upon the monthly operating report. As a practical matter you might make your task a lot easier by approaching this through the medium of the less detailed annual reports. No one expects you to become a financial analyst but it would be most helpful if you knew the categories of operating revenue, their trends, what makes them up, and how they compare with the function budgets or the estimates.

Analyzing Operating Expense

Next it is suggested that you make an analysis of the items of operating expense and prepare your own charts and graphs for fuel and electricity purchased and interchanged and operation and maintenance and depreciation and property taxes and income taxes. Somewhere along the route you will come to the conclusion, if you have not already done so, that of the few controllable expenses available to management, people are one of the major items—the number of people required to perform the operating functions and the level of their performance. Also, and inevitably, wages and salary rates and their influence upon costs will come to the top. Overtime and manning will push to the surface as will the timing of maintenance schedules.

Assistance for Thorough Job

It is not indicated that these are your direct operating responsibilities. However, a familiarity with them will inevitably assist you to do the thorough job which management has a right to expect.

At this point in your study subtract all operating expenses from operating revenues and arrive at that key of the analyst, operating income. Think about a single revenue dollar and note how many cents you have left at this point. Continue with your efforts and go right down to revenue deductions. Look at the interest on long term debt and general interest and work out your own ideas of how much of these money costs have been brought about by construction labor costs in which you have had a hand, either direct or indirect. Pay particular attention to the presence or absence of the item "interest charged to construction" and if you do not quite understand how it works talk to the manager about it.

Now add your operating expenses and your taxes and your revenue deductions and any preferred dividend costs you may have and subtract them from the operating revenues. You will have remaining the earnings available to the thousands of people that own your company. If it is not going too far it might even be suggested that if you do not presently own any of the common stock of your company, you acquire a few shares. It is the best interest-getter in profits that I know.

Preparation for Negotiation

It is to be assumed that you have a hand in the negotiating of labor rates and in the recommendations of salary levels for many non-union categories. It is believed that if you will spend the required amount of time to acquire a proper understanding of the earnings position of your company that you will be much better prepared to engage in negotiations and to impart to others a better understanding of the necessity of profits and how difficult they are to produce. Also, you will better understand the nature of our business and how its regulated operations and profits differ in continuity and amount from other businesses, particularly in the manufacturing fields. There is no question that such an understanding exists at the top levels of many large unions. However, it is often decidedly lacking at the level of local negotiating groups, often on both sides of the table. It is conceivable that these studies may lead you into a better understanding of the conditions under which your company must operate. They may furnish you with reasons why it does better or does worse than a neighbor. You will come to better understand the elements of comparable fuel costs and the percent of industrial load and the size and efficiency of your power plants and the per unit cost of your distribution systems and the thousand and one other items that go into the picture and affect profits.

Tailored Standards

It may be that you will go so far as to establish some sort of production and construction standards and a manning table to fit your needs, and while comparisons with the results of others may be helpful you must tailor the standards by which you and your company can achieve its objectives.

Go to your accountants and get a list of functions, operating and construction. It may be that your accounting is such that the labor elements are segregated. If they are not, then get started on some allocations. You may be amazed to find that very little is accomplished in your company without a labor charge of one sort or another. Much of this is direct. Some is in the nature of an overhead which too many simply pass up as a necessary evil, a prerogative of the accounting department, something not suited to analysis, and an item offering no promise of control. Nothing could be further from the truth.

Now as to the operations within the Personnel Department itself. At the 8th Annual EEI Industrial Relations Conference we are concerned

(*Continued on page* 350)

Voltage Dip and Automation

By C. E. Quick

Industrial Power Planning Engineer, The Detroit Edison Company

A paper presented before a meeting of the EEI Transmission and Distribution Committee, New Orleans, La., September 29, 1955

NEITHER voltage dip nor automation is new. The electric power industry and all electric power customers have known and experienced voltage dip for many years. So much has been written and said about automation in the past year or so, that many people believe it to be something revolutionary. However, a little careful consideration will lead to a definition of automation as the automatizing of operations previously performed manually.

Accelerated Evolution

With such a definition as a foundation, it is but a step to recognize automation as an evolution rather than a revolution. The accent which the word is receiving is merely indicative of a sudden acceleration in the evolution which has been taking place for generations. A further consideration will show that voltage dip, which we may define as any brief voltage decrease below normal without complete interruption of the source, is actually a result of the automation of power systems. It has been the evolution from manually controlled single circuits to automatically controlled multiple circuits which has reduced frequent long interruptions to voltage dips and momentary interruptions, with only rare long interruptions.

As an example, let us take a step-down station having ten lines with a total of 100 miles of sub-transmission. Every fault on the sub-transmission will cause a voltage dip on nine of the lines for the duration of relay plus breaker operating time. The magnitude of the dip will be a function of the stiffness of the source to the step-down station, and the remoteness of the fault from it. Customers served from the faulted line will have a momentary interruption while throwover operates, or if they have only one sub-transmission feed, an interruption. Even the fastest and most modern relays and breakers have combined times in excess of three cycles from time of fault to breaker open. Many of ours, which are relatively new, and which we cannot afford to retire, have combined times of six to nine cycles for faults close to the bus, and more than 20 cycles for faults which lower the bus voltage 15 per cent. From an economic standpoint alone, it will be many years before we can materially reduce the duration of voltage dips.

The problem which faces the electric power industry today results from the stage of degree of automation now attained by manufacturing industry and business. The power industry is about to be the victim of its own high standards of service. Service continuity has been so good that machine designers simply assume the electric power supply to be absolutely continuous. When we discussed the voltage dip problem with one large automatic machine builder, he said in effect, "We have to assume the power supply is continuous. We have enough problems trying to make the mechanical parts of our machines function."

Evidence for Assumption

The assumption of an absolutely continuous power supply is further evidenced by the reactions of leading control contactor and relay manufacturers when we approached them to discuss the problem. We, in Detroit Edison, are being asked by our industrial customers for voltage regulation to plus or minus ¾ of a volt, and for deviations from normal voltage for not longer than one cycle. Such limits are not practical today. Another approach is indicated. At Detroit Edison, our approach has been as follows:

Prior to 1952 we had very few complaints from customers concerning troubles due to voltage dips or momentary interruptions. We had a few in 1952 and 1953, an increasing number in 1954. Our study of these complaints highlighted two major factors—first: that the plants concerned were principally in suburban areas; and second: that new automatic machines were most affected. Both factors are readily explained: the older industrial areas of Detroit are served by an underground cable system. The number of cable failures had been as may be expected, few. The suburban areas are, of course, served from overhead transmission lines which are subject to lightning, wind, sleet, and tree limbs; public interference; and perhaps slightly more equipment failure than in the case of cable. The same plants which had moved from the cable-fed areas to the suburban areas modernized their equipment at the time of the move. Modernization in the present sense is automatizing —or automation.

Facing a Real Problem

However, since we had not previously experienced any complaints due to voltage dips, or momentary interruptions, we simply supplemented our suburban system to the capacity required, using current practices and equipment. The first few complaints were considered as serious, but, at the same time, as normal for an expanding system and for a change of customer environment. Further investigation, however, convinced us that we faced a real problem. Our most critical customers were located outside our most trouble-free area, and both their number and their degree of sensitivity was increasing. We asked other power companies if they were experiencing similar difficulty. Less than two years ago the answer was almost unanimously, "No Complaints." From a system standpoint, we have long employed double feeds to all except very small loads. Our practice of double feeds, which limited outages to the momentary interruption and voltage dip categories, had, in the past, provided our customers with highly satisfactory service. The number and nature of the complaints indicated that what had been highly satisfactory was no longer adequate. To minimize both voltage dips and momentary interruptions, we are extending the ground wire protection of our sub-transmission system.

We are making a careful examination of the customers' equipment. This has been regrettably slow, and we have much less data to report than we should like. Our customers' complaints had not particularly spotlighted any specific equipment, but had covered tool breakage, magnetic chuck releases, motor starters, automatic screw machines, milling machines, grinders, and mercury lighting. More recently we have had complaints on the shutting down of gas-fired furnaces and ovens, and of automatic plating equipment. Motor starters can be protected against voltage dips by the addition of time delay to the undervoltage releases. Before adding such delay, it was imperative that we know what would happen to the motors. Obviously, some motors could withstand lower and longer voltage dips than others.

Tests on Machines

With the full cooperation of one of our customers, we made tests on three machines on which he had experienced trouble as a result of short duration voltage dips. One machine was an automatic screw machine, the second an automatic lathe, and the third an automatic turret lathe. All were driven by 30 to 50 hp a-c motors. By minor connection rearrangements, we applied voltage dips of various magnitudes and durations to the motor feeds with full voltage on the starters and control relays. With dips of as much as 90 per cent for as long as 30 cycles, there was no damage to either the work piece or to the tools. In fact, the operators probably would not have noticed the dips except that they were aware of the test. We have concluded from these tests that, at least in some cases, the controls are more sensitive than necessary for the protection of the machines and the work-piece. Our investigation into complaints on gas-fired furnace and oven shut-downs has also indicated the use of unnecessarily sensitive controls.

Our next step was to investigate the sensitivity of the controls—particularly the contactors and relays used in automatic control circuits. We have explained our problem to a number of the principal manufacturers of control contactors and relays, asking each for laboratory measured times and percentage voltage drop-outs. Their replies and their reactions to the problem have varied widely. Their first answer is "We meet NEMA Standards." Unfortunately, NEMA Standard IC-1954, paragraph 1C 1-11.25 "Range of Operating Voltage" simply states that a-c contactors shall withstand continuously 110 per cent of rated voltage and shall close successfully at 85 per cent. D-c contactors have the same 110 per cent withstand, but shall close at 80 per cent. No mention is made of drop-out.

One major manufacturer furnished us with complete data. Their contactors from size 00 through 2 (10 amp through 50 amp) will drop-open in two cycles after drop-out voltage is reached. Drop-out voltage varies somewhat, being 32 per cent for size 00, 50 per cent for 0, 42 per cent for size 1, and 33 per cent for size 2. Sizes 3 through 6 drop out at 45 to 50 per cent and in 4 to 12 cycles. There is no appreciable difference in time to drop-out once the drop-out voltage has been passed. Preliminary information from another manufacturer shows similar drop-out voltages but times as short as ¾ of a cycle. Additional information from them is expected shortly. One major manufacturer preferred to look at the problem rather than to provide data on existing contactors and relays. They are approaching the problem from two directions and have just informed us that they are prepared to provide contactors and relays which will hold in to 30 per cent of normal coil voltage. They are also prepared to furnish adapter kits at very low cost which can be placed on most of their contactors which are now in service. Their other approach is not sufficiently advanced to permit mention other than it looks extremely promising for certain applications, particularly in existing installations.

It is readily apparent that the drop-out time for contactors and relays is not compatible with even the shortest breaker times. Further automation will require much faster contactor operation. It does appear, however, that a decrease in contactor drop-out voltage would materially decrease the number of production troubles due to voltage dip. Complete protection for the controls could, of course, be obtained by installing a motor-generator set as the supply for control voltage.

As previously mentioned, we have had complaints due to high intensity mercury lighting being extinguished on voltage dip. This is quite a problem, since many of our large industrial plants prefer straight mercury lighting, with no incandescent lighting whatever. Once a mercury light is extinguished, it takes eight minutes to get it started again. We have questioned each of the major manufacturers concerning the effect of voltage dip on their lamps. There is considerable variation due to the ballast, the operating conditions, lamp life, etc. However, with good ballasts and average lamp life almost all high intensity mercury lamps will drop off in 2 cycles upon complete loss of voltage. For dips of less than 100 per cent, there is a variation between manufacturers. The lamps of two manufacturers will normally withstand dips of 25 per cent. Those of a third manufacturer will normally withstand only a 15 per cent dip. None of the manufacturers has been able to tell us what the time factor applied to the partial dips will be.

Anticipated Complaints

We have not yet had any complaints due to voltage dips from customers operating the new ultra high speed computing machines. We anticipate them at anytime, however. The degree of sensitivity to voltage dip will depend upon the type of information storage used and the computing system employed. These machines are so intricate and use such a relatively small amount of power that it would seem reasonable for them to have a built-in protection from voltage disturbances.

We can summarize the foregoing as follows: The operating characteristics of existing control contactors and relays are not compatible with practical power system design. Regardless of improvement in power system design, control equipment manufacturers must coordinate their designs with practical power system characteristics. They can do so, but must be made aware of the problem and of the limitations of power system design. We, of the power industry, must take the initiative in presenting the problem and its indicated solution. We must also face up to the issue—and tell our customers that while we will make every attempt to minimize voltage dips, we cannot eliminate them.

Hugh C. Thuerk

THE electric industry lost one of its outstanding executives on October 5th with the death of Hugh C. Thuerk, Executive Vice President of New Jersey Power & Light Co. and Vice President of Jersey Central Power Co. Mr. Thuerk was 59 years of age and died suddenly at the Morristown, N. J., Memorial Hospital.

With an unusual capacity for friendliness, for helpful cooperation in matters pertaining to the general welfare of the industry, Hugh Thuerk was known and liked throughout the light and power field. Mr. Thuerk was a member of the Board of Directors of the Institute through the administrative years 1950-1953. Serving with distinction on various Committees of the Institute and its predecessor, the National Electric Light Association, he was Chairman of the General Power Committee of NELA in the 1928-1932 administrative years; Chairman of the EEI Post-War Planning Committee, 1944-1946; and Chairman of the Special Research Advisory Committee in 1952-1953.

A native of Buffalo, Mr. Thuerk received his Bachelor of Science Degree in Electrical Engineering at Purdue University in 1919 and his Masters Degree in Electrical Engineering from Purdue University in 1922.

Mr. Thuerk began his career in the electric utility industry in 1921 when he was employed as commercial manager by the Olean (N. Y.) Power & Light Co. Subsequently he held positions with Keystone Power Corp. in Ridgeway, Pa., Erie Lighting Co. in Erie, Pa., and Utility Management Corp. in New York, N. Y., prior to 1941 when he accepted the position of President and General Manager of the Bradford (Pa.) Electric Corp. He retained that position until 1943 when he became President of New Jersey Power & Light Co.

Mr. Thuerk was President of the New Jersey Utilities Association in 1945 and 1946, a member of the New Jersey State Board of Education from 1947 to 1952, Chairman of the Dover Area YMCA Building Fund in 1946, and former Deputy State Director of Civil Defense. At the time of his death he was Vice President and Director of the National Union Bank (Dover), Vice President and Director of New Jersey State Chamber of Commerce, Director of the Morris County YMCA, a member of the Advisory Committee on Civil Defense for the State of New Jersey, Regional Director of the Purdue Alumni Association, member of the Dover Rotary Club, Elder in the Presbyterian Church in Morristown, and a 32nd Degree Mason.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, AND CIRCULATION REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, U. S. Code, Section 233).

Of EDISON ELECTRIC INSTITUTE BULLETIN, published monthly at Philadelphia, Pa., for October, 1955.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, EDISON ELECTRIC INSTITUTE, 420 Lexington Avenue, New York City 17; Editor, Wilgar Coleman, 420 Lexington Ave., New York City 17; Managing Editor, none; Business Manager, none.

2. The owner is: EDISON ELECTRIC INSTITUTE—not incorporated—trade association, 420 Lexington Ave., New York City 17; Harllee Branch, Jr., President, 420 Lexington Ave., New York City 17; H. S. Sutton, Treasurer, Consolidated Edison Co. of New York, Inc., 4 Irving Place, New York City; A. B. Morgan, Secretary, 420 Lexington Avenue, New York City 17.

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WILGAR COLEMAN, Editor

Sworn to and subscribed before me this 3rd day of October, 1955.
(Seal) MARY L. COONEY,

Notary Public, State of New York.
(My commission expires March 30, 1957.)

People and Profits

(*Continued from page* 347)

about making a profit from your operations. Qualified speakers have spoken on how you can live profitably under the union contract and how you can effectively use manpower toward the end of profit and how you can make communications pay off and how you can make employee services profitable. These approaches are, as I have stated, heartening. They are music to the ear of the manager, music to the ear of the chief executive who in the end is responsible for the development of profits.

It is to be hoped that future conferences will be along similar lines and that by meeting together and discussing your common problems you will be able to tell each other, and then your managers, how to make indoctrination and accident prevention and job analysis and job evaluation and training and all of your other functions pay off. Also, that you will be specific enough in your findings so that you can prove to yourself and then to your boss that they will pay off and can and will contribute to profits.

I believe that if you will accept these suggestions in the spirit in which they are given that much good, for management, for worker, for customer, for company, for you will result.

Profits are necessary. People are required for profits. Profits are required for people and their jobs. Your business is people. Learn about profits and you will do a better job for all concerned.

Personals

Calvin Young, Vice President, has been elected President and Chief Executive officer of West Texas Utilities Co. of Abilene, Tex. He succeeds **Price Campbell** who has become Chairman of the Board of the company which is a subsidiary of Central & South West Corp.

Mr. Young became associated with WTU in 1924 as assistant to Mr. Campbell who was then vice president and general superintendent. In this capacity, Mr. Young was responsible for substation construction. In 1935 he was advanced to chief engineer, became vice president and a director of the company in 1953, and was made assistant to the president in 1954.

After graduation from Alabama Polytechnic Institute and Massachusetts Institute of Technology, Mr. Young joined General Electric Co. for which he worked as a service engineer.

Carl J. Forsberg, President, Wisconsin Power and Light Co., has been named Chairman of the Steering Committee for the Electric Companies Public Information Program which is composed of a major segment of the electric utility industry and is engaged in telling the facts of the industry to the public. He succeeds **Henry J. Sargent** who resigned as chairman to accept the presidency of American & Foreign Power Co., Inc.

Mr. Forsberg, a 1926 graduate of the U. S. Naval Academy, has 27 years' experience in the electric utility field. After graduation, he served six years as a power engineer with the Public Service Co. of Northern Illinois, then joined Wisconsin Power and Light in 1934. Mr. Forsberg worked in several capacities before being named vice president in charge of field operations in 1948. He was made vice president in charge of operations in 1953 and elected to the presidency in July, 1954. He is president of the Wisconsin Utilities Association.

Orville E. Flora, Secretary and Treasurer of Pennsylvania Power Co., was elected President of the Pennsylvania Electric Association at its 48th annual meeting in Philadelphia. Mr. Flora has served as first vice president of PEA for the past year.

Mr. Flora began his utility career with the predecessor company of Ohio Edison Co. in Springfield, Ohio. In 1931 he joined Pennsylvania Power as secretary and treasurer. He was elected a director of the company in 1944.

Vice presidents named at the meeting were **Robert P. Liversidge,** Philadelphia Electric Co.; **Joseph O. Chambers,** West Penn Power Co.; and **George Keenan,** Pennsylvania Power & Light Co.

Don B. Potter, Administrative Vice President, Monongahela Power Co., was elected President of Public Utilities Association of the Virginias at its 37th annual meeting. He succeeds **A. J. Bowen,** Distribution Manager, Northern Virginia Power Co.

PUAV also elected **W. J. Stewart,** Wheeling Electric Co., as First Vice President and **J. C. Parrott,** President, Roanoke Gas Co., as Second Vice President.

Associated with Monongahela Power for 26 years, Mr. Potter became assistant to the executive vice president in 1950 and was elected vice president of the utility two years later. In an expansion of its executive organization last year, Monongahela moved Mr. Potter to the post of administrative vice president.

1955 AGA-EEI ELECTRONICS SEMINAR

(Sponsored by the EEI Accounting Division and AGA Accounting Section)

at the

Warwick Hotel, Philadelphia, Pa.

November 28, 29, 30, 1955

Major Theme:

The MEDIUM-SIZED Computer

in

The MEDIUM-SIZED Utility

Innovations:

PLANT VISITATIONS TO—

Burroughs Corp., Remington Rand UNIVAC Laboratories.

DISCUSSION GROUPS

Small groups for down-to-earth discussion of "The Medium-Sized Computer" and "The Large-Sized Computer" led by representatives from our industry engaged on work in these areas.

"WHAT IS GOING ON"

A current review and summary of our industry's status in research, training, planning, and installation of electronic data processing equipment.

AND

Individual presentations by the equipment manufacturers of their latest equipment and developments. See and hear what is currently being done by such companies as:

Burroughs, I. B. M., Remington Rand, Electrodata, Logistics Research, Underwood.

Attendance is limited to representatives of the Gas and Electric Industries.

George L. Brain has been elected Vice President and Secretary of Southern Services, Inc., for whom he has been in charge of the New York office. He succeeds **S. A. Dawley,** retired.

Mr. Brain became associated with the Southern system in 1924 when he joined Alabama Power Co. He has served as counsel for The Commonwealth & Southern Corp., general counsel for Commonwealth Services, Inc., and counsel for Southern Co. system companies.

A graduate of Kenyon College and Yale University, Mr. Brain is a member of the American, New York State, and Federal Bar Associations.

At Florida Power & Light Co., **Alan Wright** has been elected a Vice President. Mr. Wright, Northern Division Manager at the time of his election, will retain the duties of that position in his new role.

First associated with the company in 1931 when he was named Northern Division sales engineer, he has since held a number of positions including those of manager at Stanford, distribution superintendent, and sales manager then commercial manager of the Northern Division. His appointment as Northern Division manager came in 1949.

Mr. Wright's many civic activities include the presidency of the Daytona Beach Chamber of Commerce.

Clyde M. Eppard, General Superintendent of Venice Plants, has been named Assistant to the Vice President—Production and Distribution at Union Electric Co. of Missouri. In his new position, Mr. Eppard will act in a staff capacity, working with a variety of problems in production and distribution and performing special duties in connection with coal coordination matters.

Since joining Union Electric in 1928 as a student engineer, he has held the positions of assistant engineer, Cahokia Plant; electrical engineer, Cahokia and Venice I; electrical superintendent, Venice Plants; and general superintendent, Venice Plants.

At Pacific Gas and Electric Co., **John F. Bonner** has been appointed Assistant to the Vice President and Chief Engineer.

During high school and college vacations, Mr. Bonner had extensive surveying and pre-engineering experience with the U. S. Forest Service, Alcoa Ltd. of Canada, the U. S. Corps of Engineers, and Western Colorado, Inc. Following graduation from the University of California, Mr. Bonner joined PG&E as an assistant hydrographer and began a specialization in hydroelectric development that led him to executive positions.

Joseph A. McCarthy, Paymaster for The Detroit Edison Co. since 1936, has been named Assistant Treasurer and Transfer Agent for the company.

Henry O. Chase will succeed Mr. McCarthy as paymaster. He has been serving as assistant paymaster since 1943.

Mr. McCarthy, a graduate of the University of Detroit College of Commerce and Finance, has been with the company since 1917. Mr. Chase, also a University of Detroit graduate, has been with Detroit Edison since 1934.

Albert Bauer, Portland business executive, has joined Pacific Power & Light Co. as Assistant Chief Engineer. The post will include responsibility for work of the operating, engineering, construction, and purchasing divisions.

Mr. Bauer was chief engineer and general manager of Oregon Shipbuilding during World War II when that organization built 455 ships for the maritime commission. He was associated with the Corps of Engineers during construction of Bonneville dam and held the position of general manager of Consolidated Builders during the early construction stages of Detroit dam.

New Film on "Closing" Sales Available from EEI

A NEW training medium, "Repetitive Impact Training Set," especially designed to give electric appliance salesmen selling experience even before they meet the public, has been prepared by the Sales Training Committee of the Edison Electric Institute. Emphasis is on "how to close," the most important—and hardest—part of a sale.

The set utilizes a new technique, "Repetitive Impact Training," a continuous 16mm loop film whereby the story is repeated until the trainee grasps the situation. A second film lets the trainee assume the role of the salesman in the same situation. It too repeats itself until the trainee establishes confidence in himself in closing the sale.

This method has great value because it gives trainees experience before they meet the public and shows them how to ask for the customers' signature—the signing on the dotted line which closes any sale.

The two films are called the pattern loop film and the practice loop film. In the first the trainee sees scenes between customers and an expert salesman. The customer voices opinions and the film salesman counters with a strong sales talk, giving the viewer a good suggested closing statement. In the practice loop film the trainee hears the same customer objections. Then there is a pause and a trainee is given the opportunity to present his own sales rebuttal. Thus he actually learns by doing.

It is excellent both for new and old salesmen, either as a training or a refresher course. It offers an excellent adjunct to the EEI Sales Training Course.

The set consists of the pattern loop film, the practice loop film, a training manual, an adapter arm, and a portable screen. The loop film and the adapter can be used with any 16mm sound motion picture projector. The 15″ portable screen is included in the complete package but is not necessary for showing the film, as any wall or small size screen will do.

This sales training package sells for $160.00, (10 per cent additional to non-members of EEI). Additional sets are $100.00 each. The kit is offered on a 10-day free trial basis.

Further information regarding the set may be obtained by inquiry to Commercial Department, Edison Electric Institute, 420 Lexington Ave., New York 17, N. Y.

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Meter and Service, GEORGE J. YANDA.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
Prime Movers, JOHN M. DRISCOLL.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Transmission and Distribution, GEORGE H. FIEDLER.....Rochester Gas and Electric Corp., Rochester, N. Y.

GENERAL

Accident Prevention, RAYMOND W. WHITE.....Pacific Gas and Electric Co., San Francisco, Calif.
Area Development, JOHN R. FREDERICK.....Wisconsin Power and Light Co., Madison, Wis.
Atomic Power, EDGAR H. DIXON.....Middle South Utilities, Inc., New York, N. Y.
Electric Power Survey, ARTHUR S. GRISWOLD.....The Detroit Edison Co., Detroit, Mich
Financing and Investor Relations, W. J ROSE.....American Gas and Electric Co., New York, N. Y.
General Division Executive Committee, D. S. KENNEDY.....Oklahoma Gas & Electric Co., Oklahoma City, Okla.
Industrial Relations, JOHN C. ARNELL.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Insurance, R. D. CONSTABLE.....Niagara Mohawk Power Corp., Syracuse, N. Y.
Legal, D. BRUCE MANSFIELD.....Ohio Edison Co., Akron, Ohio
Membership, E. S. THOMPSON.....West Penn Electric Co., Inc., New York, N. Y.
Prize Awards, G. W. OUSLER.....Duquesne Light Co., Pittsburgh, Pa.
Purchasing and Stores, W. M. HOLLS.....Baltimore Gas and Electric Co., Baltimore, Md.
Rate Research, C. A. WILLIAMS.....The United Illuminating Co., New Haven, Conn.
Regulation, J. E. CORETTE.....The Montana Power Co., Butte, Mont.
Research Projects, C. W. FRANKLIN.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Statistical, F. A. KEANE.....Public Service Electric and Gas Co., Newark, N. J.
Tax Policy, (TO BE ANNOUNCED)
Technical Assistance for Overseas Visitors, HARVEY BUMGARDNER.....The Detroit Edison Co., Detroit, Mich.
Transportation, RANDOLPH WHITFIELD.....Georgia Power Co., Atlanta, Ga.

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